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# Project Management Tool

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# **PROJECT MANAGEMENT TOOL**

A graduate project submitted to Dakota State University in partial fulfillment of the  
requirements for the degree of

Master of Science

in

Information Systems

December, 2008

By

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Project Committee:

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## PROJECT APPROVAL FORM

We certify that we have read this project and that, in our opinion, it is satisfactory in scope and quality as a project for the degree of Master of Science in Information Systems.

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## **ABSTRACT**

In an organization there are many issues regarding project management. Managing the projects and the human resource is becoming difficult day by day. This 'Project Management Tool' is an attempt to solve those issues. It mainly helps project managers to monitor and control projects in an organization effectively.

Using this tool superiors can assign projects, modules, tasks to their sub-ordinates and can monitor the status. They can also send E-Mails to their sub-ordinates using the E-Mail generation feature. This project also enables the employees to submit their day-to-day work. This project generates three different reports namely project reports which gives details of all the projects, task reports which gives description of all the tasks in an organization and employee reports which gives details of all the employees.

This project is developed in asp.net with sql server as back end.



## DECLARATION

I hereby certify that this project constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

I declare that the project describes original work that has not previously been presented for the award of any other degree of any institution.

Signed,

---

Karteek Boyanapalli

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# CHAPTER 1

## INTRODUCTION

When we think of project management it mainly involves processes, which includes considerable data, measurements, analysis and communication. The need for project management was driven by businesses that realized the benefits of organizing work around projects and the critical need to communicate and co-ordinate work across departments and professions. Most of the processes involved in managing projects cannot be handled effectively without the aid of project management software. Hence, organizing for project management will include the selection of project management tools.

### 1.1 Problem Definition

In the Present Day System, tasks are being carried out manually in the organizations which is time consuming and tedious. It requires the coordination of many different people and completion of many tasks in a precise sequence that would take a great deal of time to manage manually. When we think of the maintenance of the Employee records manually, it is very difficult to maintain them. The user may not get the required details regarding the Employee, projects or tasks efficiently.

In this type of situation, it is convenient for the user when he has a tool that can be used to carry out the tedious tasks without spending lot of time and which maintains all the details of projects at one place.

### 1.2 Problem Solution

Using our Project Management Tool, we can solve the above problem by carrying out the work in the form of assignment of tasks from superiors to sub-ordinates in an efficient manner. Reports regarding the projects, employees and tasks can be retrieved in a consolidated manner. When it comes to the communication among the employees, Emails could be generated to the respective employees regarding any issues in the Organization that accounts for the effective communication between the superiors and their sub-ordinates.

### **1.3 Project Description**

PMT is a tool used to manage and organize the resources in such a way that these resources deliver the work required to complete the project within the defined scope, time and cost constraints. It also helps the project manager to oversee the workings and development of an entire project ensuring that everything is co-ordinate and planning is at its optimum.

This project management tool can be used in any organization for effective controlling and monitoring of projects. The people who can use this tool are administrator, project manager, team leader, team member.

#### **Administrator**

The Administrator is a person having administrative or managerial authority in an organization.

In this tool he is responsible for maintaining the records of employees.

#### **Project Manager**

Project manager after the client interaction, accepts the projects and monitors them. Generally projects will be divided into modules and modules into tasks. Project manager assigns a module under a project to a particular team leader and keeps track of its status. For team leader to work on the module he needs group of team members. So, project manager assigns team members to team leaders. Project manager assigns tasks to his subordinates. At the end of the day project manager submits the work done by him through timesheet. Project manager can view reports to get overall description of projects.

#### **Team Leader**

The person who understands the ultimate project objectives and who guides the rest of the team down the path through clear vision setting and effective communication is team leader.

After team leader is being assigned a module, he divides the module into tasks, and assigns them to team members. At the end of the day team leader fills timesheet which keeps track of hours worked by him.



**Team Member**

Team member has to perform the detailed and defined tasks necessary to complete a specific portion of the overall project or program. The team member has limited visibility into strategic planning and the work necessary to develop project and program plans. Team member primary focus is on mastering his area of expertise and gaining a firm grasp on the task at hand in order to deliver effectively.

He can view all the tasks assigned to him by his superiors and works on those tasks, after the completion of the tasks he submits them by filling time sheet.

**Modules**

The basic modules involved in our project are

1. Login
2. Registration
3. Task Delegation
4. Timesheet
5. Reports

**Login**

The user can get access to this tool with the help of this module

**Registration**

When ever an employee joins the organization, the administrator has to register him to this tool with the help of this module.

**Task Delegation**

Using this module tasks can be delegated by superiors to the subordinates, also the status of the work can be continuously monitored.

**Timesheet**

At the end of the day every employee has to fill the timesheet which keeps track of actual hours worked by that employee.

**Reports**

In project management tool we are generating 3 different types of reports. They are employee reports, project reports and task reports. The over all description of projects can be viewed in project reports. The details of employees can be viewed in employee reports. The total

number of tasks which are carried out by particular employee in the organization can be viewed in task reports.

#### **1.4 Environment**

The environment to run this project is systems with windows XP/windows 2000 operating system, which are connected through LAN.

#### **1.5 Deliverables**

This tool is basically an intranet application.

#### **1.6 Software and Hardware Requirements**

##### **1.6.1 Software Requirements**

Platform: Dot Net 2003

Database: Microsoft sql server 2000

Web Server: IIS (Internet Information Services)

Operating System: Windows XP, Windows 2000

##### **1.6.2 Hardware Requirements**

Processor: Pentium 3, Pentium 4, Celeron

RAM: 256MB or higher

#### **1.7 Success Criteria**

This project can be successfully used by organizations for effective task delegation and monitoring of projects.

## CHAPTER 2

### REQUIREMENT ANALYSIS

#### 2.1 Understanding Concept

##### 2.1.1 Understanding Intranet

An intranet is a private computer network based on the communication standards of the Internet. It is smaller version of the Internet that only the members of an organization can see. Companies can create, within their walls, a manageable, secure version of the World Wide Web.

##### Intranet Features

1. Uses TCP/IP (Transmission Control Protocol/Internet protocol) for both wide-area and local-area transport of information.
2. Uses HTML (hypertext markup language), SMTP (Simple mail transport protocol) and other open Internet-based standards as the means of moving information from clients to servers.
3. It is completely owned by the corporation and not accessible from the Internet-at-large by the general public.

##### Why we use intranet

1. The Intranet is built on a technology standard that everyone uses. It is less expensive.
2. The tools to build an Intranet are the same that you use to build a Web page.
3. An Intranet provides opportunities for multimedia that internal corporate networks often do not provide.
4. Intranet is available 24 hours day like any other network.
5. The ability to hyperlink on an Intranet provides fast information access that other networks do not offer.

##### 2.1.2 Why we developed intranet application

Intranets complement or substitute most internal employee communications in use. An Intranet allows faster communication, wider distribution and greater efficiency than many

printed and electronic media. As Project Management Tool involves interactions among employees we developed it as an intranet application.

## **2.2 Understanding ASP.NET**

ASP.NET is a programming framework used to create enterprise-class Web Applications. These applications are accessible on a global basis leading to efficient information management.

The .NET Framework was introduced with a vision to create globally distributed software with Internet functionality and interoperability. Developing Internet applications with the .NET Framework is very easy. ASP.NET is built into this framework. We can create ASP.NET applications using any of the built-in languages.

ASP.NET uses the Common Language Runtime (CLR) provided by the .NET Framework. This CLR manages execution of the code we write. ASP.NET code is a compiled CLR code instead of interpreted code .CLR also allows objects written in different languages to interact with each other. The CLR makes development of Web applications simple.

ASP.NET is purely server-side technology. ASP.NET code executes on the server before it is sent to the browser.

### **Web Server (IIS):**

Web servers run special software to support mail exchange, FTP, HTTP access, and everything else clients expect in order to access the web content. In order to use ASP.NET, your computer needs to act like a web server. In fact, while you are testing an ASP.NET application your development computer will work exactly the same way as it would over an internet connection to a remote client. When you test a page, you will actually access the page through IIS (internet information server) and retrieve the final HTML through an HTTP transfer.

It requires one to have the IIS software on our computer in order to use ASP.NET.IIS is included with Windows 2000,Windows XP ,and Windows NT, but it is included as an optional component and is not installed by default. To create ASP.NET programs successfully ,one need to make sure IIS is installed, preferably before you install the .NET framework or Visual Studio .NET.

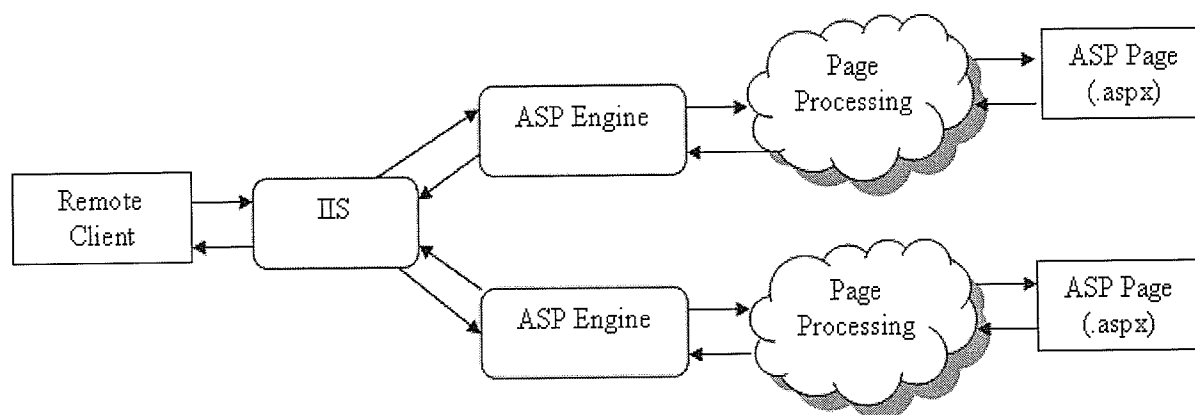


Figure 1. ASP.Net page compilation

### 2.2.1 ADO.net in ASP.NET

ADO.NET (Activex Data Objects) is a set of computer software components that can be used by programmers to access data and data services. ADO.net allows users to connect to database in two ways.

- 1) Connection oriented model
- 2) Disconnected model

#### Connection oriented model

In this type of connectivity, connection is required between application and database for every manipulation.

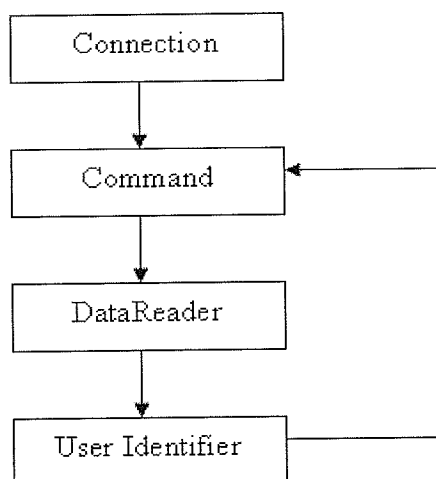


Figure 2. Connection oriented model

### Disconnected model

In this type of connectivity connection is required between application and database only when passing queries.

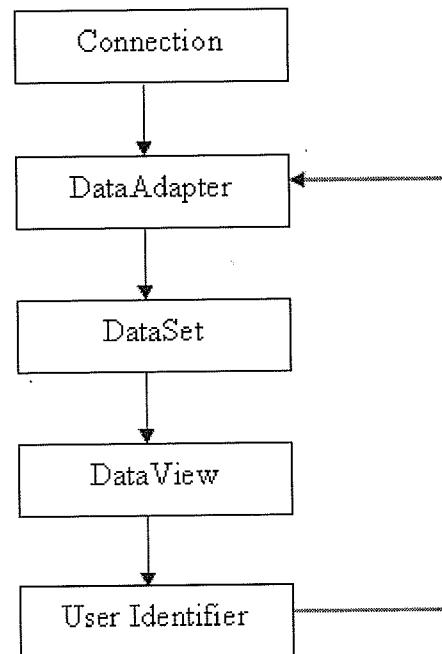


Figure 3. Disconnected model

### Connection

This class is used to establish physical connection between application and database.

```
Dim obj as xxxconnection
```

```
xxxconnection=new xxxconnection (servername, databasename, userid, password)
```

### Command

Command class is used to execute queries.

```
Dim objname as xxxcommand
```

```
Objname=new xxxcomand ()
```

### Data Adapter

It is a collection of commands which acts as bridge between application and database that helps to transfer data.

### Dataset

Dataset is a cache memory which is capable of storing any number of tables from same or different database.

### **2.2.2 Session management in ASP.NET:**

Session object can be used for storing session-specific information that needs to be maintained between server round trips and between requests for pages. Session object is per-client basis, which means different clients generate different session object. The ideal data to store in session-state variables is short-lived, sensitive data that is specific to an individual session.

Storing information in the session:

```
Session ["myname"] ="ABC";
```

Retrieving information from the session:

```
myname=Session ["myname"];
```

Session state is global to entire application for the current user. Session state can be lost in several ways:

1. If the user closes and restarts the browser.
2. If the session times out due to inactivity.
3. If the programmer ends the session in code.
4. If the user accesses the same page through a different browser window.

### **2.2.3 Sending Mail in ASP.NET:**

ASP.net provides a built-in option of sending mails. The mailing feature uses the built-in SMTP service included with IIS.

The namespace appropriate for working with mails is System.Web.Mail.

One needs to create a new mail message object, and set properties to identify the recipient, the priority, the subject, and the message itself.

## 2.3 Architecture Diagram

Project Management Tool follows 3-tier architecture model. A 3-tier application is a program which is organized into three major disjunctive tiers. These tiers are

- Presentation Tier (Front end)
- Logical Tier (Middleware)
- Data Tier (Backend).

Each layer can be deployed in geographically separated computers in a network. They can also be deployed on physically separated machines. The characteristic of the tier communication is that the tiers will communicate only to their adjacent neighbours. For an example, The Presentation Tier will interact directly with the Business Tier and not directly with Data Access or Data Tiers.

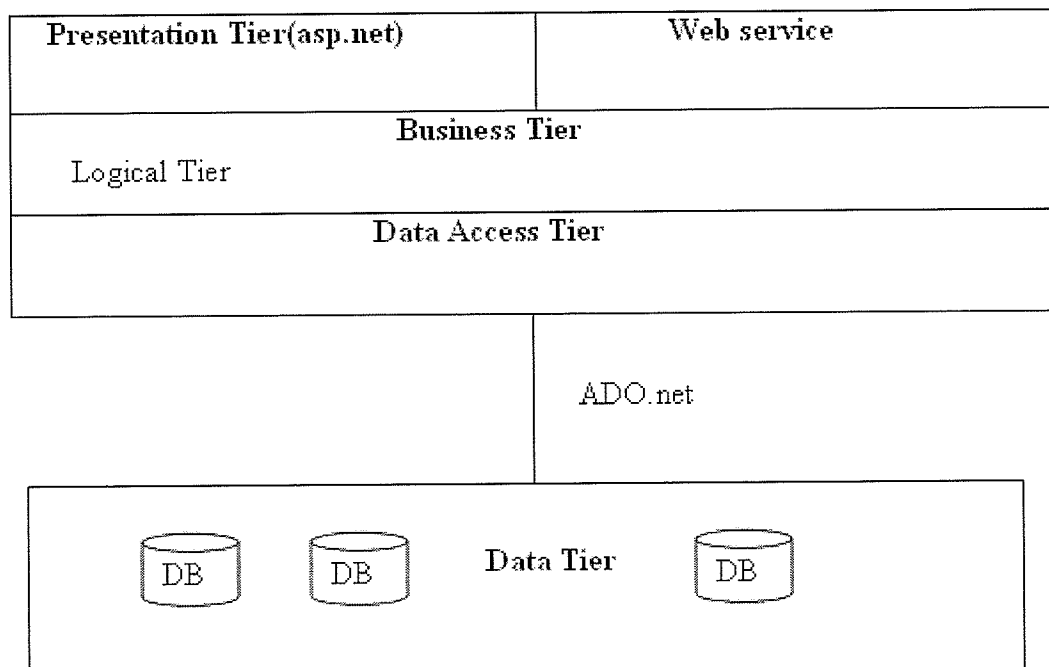


Figure 4. Typical three tier architecture

### Data Tier

This Tier is responsible for retrieving, storing and updating Information .Therefore this tier can be ideally represented through a commercial database. We consider stored procedures as a



part of the Data Tier. Usage of stored procedures increases the performance and code transparency of an application.

### **Business Tier**

This sub tier contains classes to calculate aggregated values and this tier does not know about any GUI controls and how to access databases. The classes of Data Access Tier will supply the needy information from the databases to this sub tier.

### **Data Access Tier**

This tier acts as an interface to Data Tier. This tier knows how to (from which database) retrieve and store information.

### **Presentation Tier**

This Tier is responsible for communication with the users and web service consumers and it will use objects from Business Layer to response GUI raised events.

## **2.4 Various Modules**

Before going to the modules involved in our project let us understand the need for modularization.

The Modules involved in PMT

- 1) Login.
- 2) Registration.
- 3) Task Delegation.
- 4) Time Sheets.
- 5) Reports.

### **Login**

The Login Module is mainly used by the employees to get access to the tool. Here, based on the unique Login ID and Password, users such as Administrators, Project Managers, Team Leaders and Team Members can manage processes specific to their business. When the employee logs in session is created and is maintained till he logs out. And later it will be destroyed, restricting the illegal access to the tool by other employees.

## **Registration**

Registration is a process of registering the employees of a company. Whenever a new employee joins the organization administrator enters all the details like employee First name, Last name, Date of joining, Designation, Employee Type, Official E-Mail ID, Alternate E-Mail ID, Employee Phone Number, Experience, Areas Worked etc. After entering the details, the Module will automatically register the employee to the tool. It generates username and password randomly and sends the same to the employee mail box along with URL (uniform resource locator).

For the first time, employee logs in with the user ID and password assigned to him. As the password is randomly generated employee is given an option to change his password.

## **Task Delegation:**

Task Delegation can be defined as the process where 'n' no of tasks would be delegated to the subordinates by their superiors.

Generally projects will be divided into modules and modules into tasks. After a project is signed by the organization it is assigned to project manager. Project manager estimates the cost and time and adds the projects to the tool. Then, projects will be divided into modules and will be delegated to respective team leaders. Also, a team of members are assigned to team leader to process the module. Later, team leaders divide modules into tasks and assign them to their team members.

At any point of time, team member can view the tasks assigned to him. A mail is also generated to the person intimating about assigned tasks.

The tasks assigned by superiors will be continuously monitored. If any assigned task is falling behind the schedule alerts can be sent to the respective persons through E-Mail.

## **Time sheet**

Time sheet is a form that employee fills out to indicate how much time they have spent performing a job.

At the end of the day all the employees of the organisation need to fill the timesheet.

Timesheet are filled:

- A) To submit the work done by a person.
- B) To submit the actual hours spent on a task.
- C) To submit the status of the task.

Once, time sheet is filled by an employee for a task the reflections are made to the actual hours worked and status. Time sheet provides flexibility to user to add task to him self which can be a miscellaneous task.

## **Reports**

The Overall statistics of the project can be viewed in reports.

In this tool we have 3 kinds of reports

- Project reports
- Employee reports
- Task reports

### **Project Reports**

This project reports will help to communicate the status of the project to the staff. It also enables the people informed of the progress of the project regularly and to raise any issues for their attention. In the project reports, one can view the details like total no. of modules, tasks, status of the project, number of due date extensions, assigned users. One can also view the detailed description of all the modules and tasks involved in each project.

In addition to above features for the retrieval of the data in the desired fashion we go for filters. The filters provided here are

- a) Based on type of the project (Billable/Non Billable).
- b) Status of the project.
- c) Based on assigned to.

For instance, if we want list of all the projects of type 'Billable', we can get this by applying filter. Apart from this we also provided search criteria that enable the users to get the relevant information they want.

The search criterion is:

- a) Searching pending projects.
- b) Searching projects by Date.
- c) Searching projects by Client name.

- d) Searching projects by project name.

### **Task Reports**

Task reports give overall tasks carried out in the organisation by all employees. Here also we applied filters based on projects, status and assigned to. If one wants to know all the tasks carried out by a person this can be obtained by applying the 'Assigned to' filter.

### **Employee Reports**

Employee reports give the details of all the employees in the organization. i.e currently working and ex-employees.

Project Manager and Administrator can view all the employee details but team leader is restricted to view only his sub-ordinate's details. By seeing the employee reports one can view the total no. of employees. To get specific information, here also we can apply filters. The filters provided here are based on designation and experience. Here, we can also search people based on their specialization.

## CHAPTER 3

### DESIGN

#### 3.1 UML as design tool

The Unified Modeling Language (UML) is a standard language for specifying, visualizing, constructing, and documenting the artifacts of software systems as well as for business modeling and other non-software systems. The UML represents a collection of best engineering practices that have proven successful in the modeling of large and complex systems. The UML is a very important part of developing Object oriented software and the software development process. The UML uses mostly graphical notations to express the design of software projects. Using the UML, helps project teams communicate, explore potential designs, and validate the architectural design of the software.

#### 3.2 Types of UML diagrams used in this project

Each UML diagram is designed to let developers and customers view a software system from a different perspective and in varying degrees of abstraction. Some UML diagrams include:

##### Use Case Diagram

A use case is a set of scenarios that describing an interaction between a user and a system. A use case diagram displays the relationship among actors and use cases. The two main components of a use case diagram are use cases and actors.

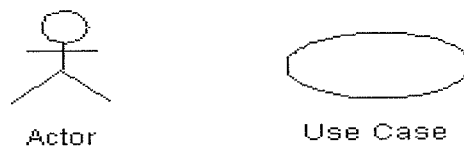


Figure 5. Components of Use Case Diagram

An actor represents a user or another system that will interact with the system you are modelling. A use case is an external view of the system that represents some action the user might perform in order to complete a task.

### Class Diagram :

Class diagram models class structure and contents using design elements such as classes, packages and objects. It also displays relationships such as containment, inheritance, associations and others.

Classes are composed of three things: a name, attributes, and operations. Below is an example of a class.

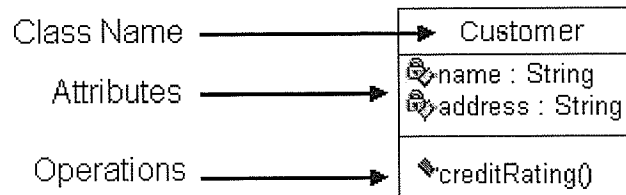


Figure 6. Elements of Class Diagram

### Activity Diagram

Activity diagram is a special state diagram where most of the states are action states and most of the transitions are triggered by completion of the actions in the source states. This diagram focuses on flows driven by internal processing. The diagrams describe the state of activities by showing the sequence of activities performed. Activity diagrams can show activities that are conditional or parallel.

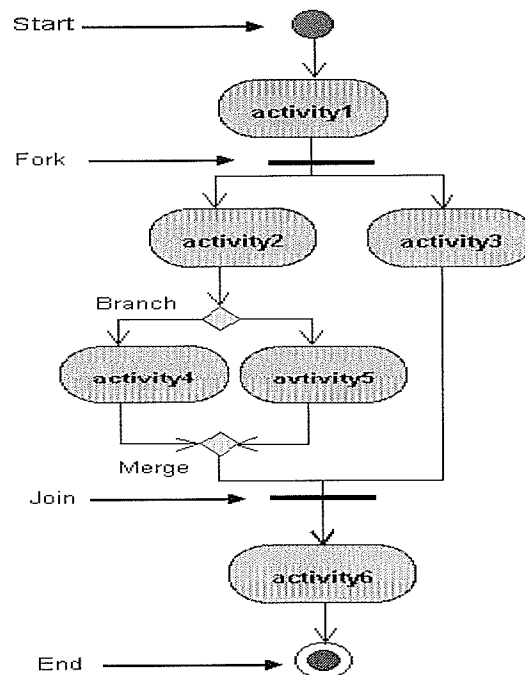


Figure 7. Activity Diagram

### 3.3 Various UML Diagrams

#### 3.3.1 Use case diagrams

##### Use case diagram for administrator

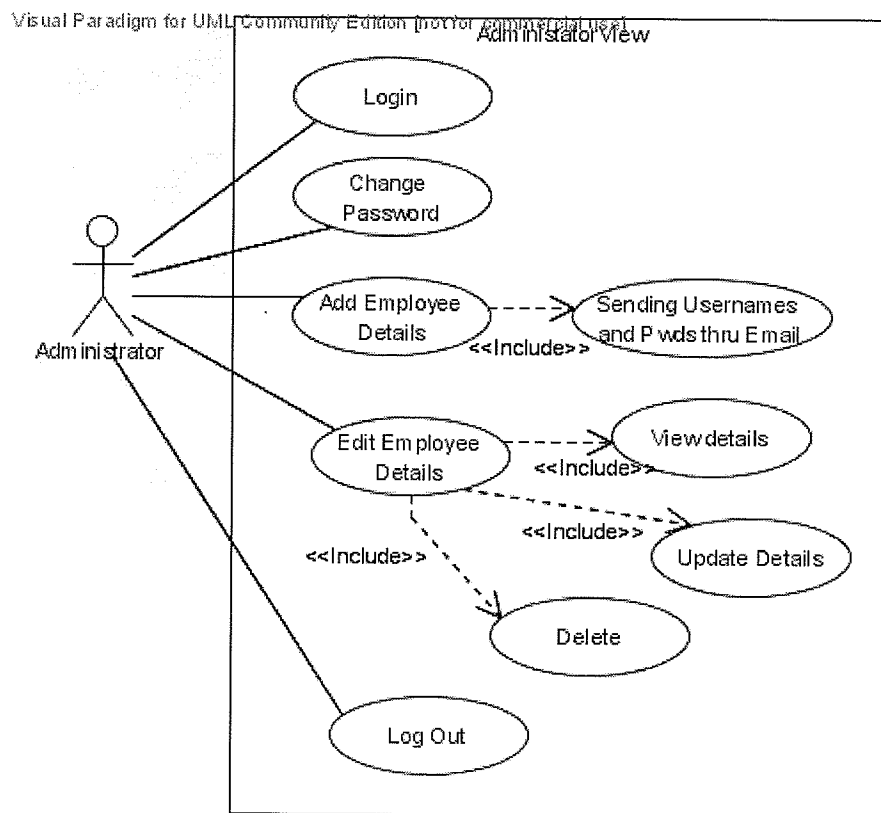


Figure 8. Use Case Diagram for administrator

# Use case diagram for project manager

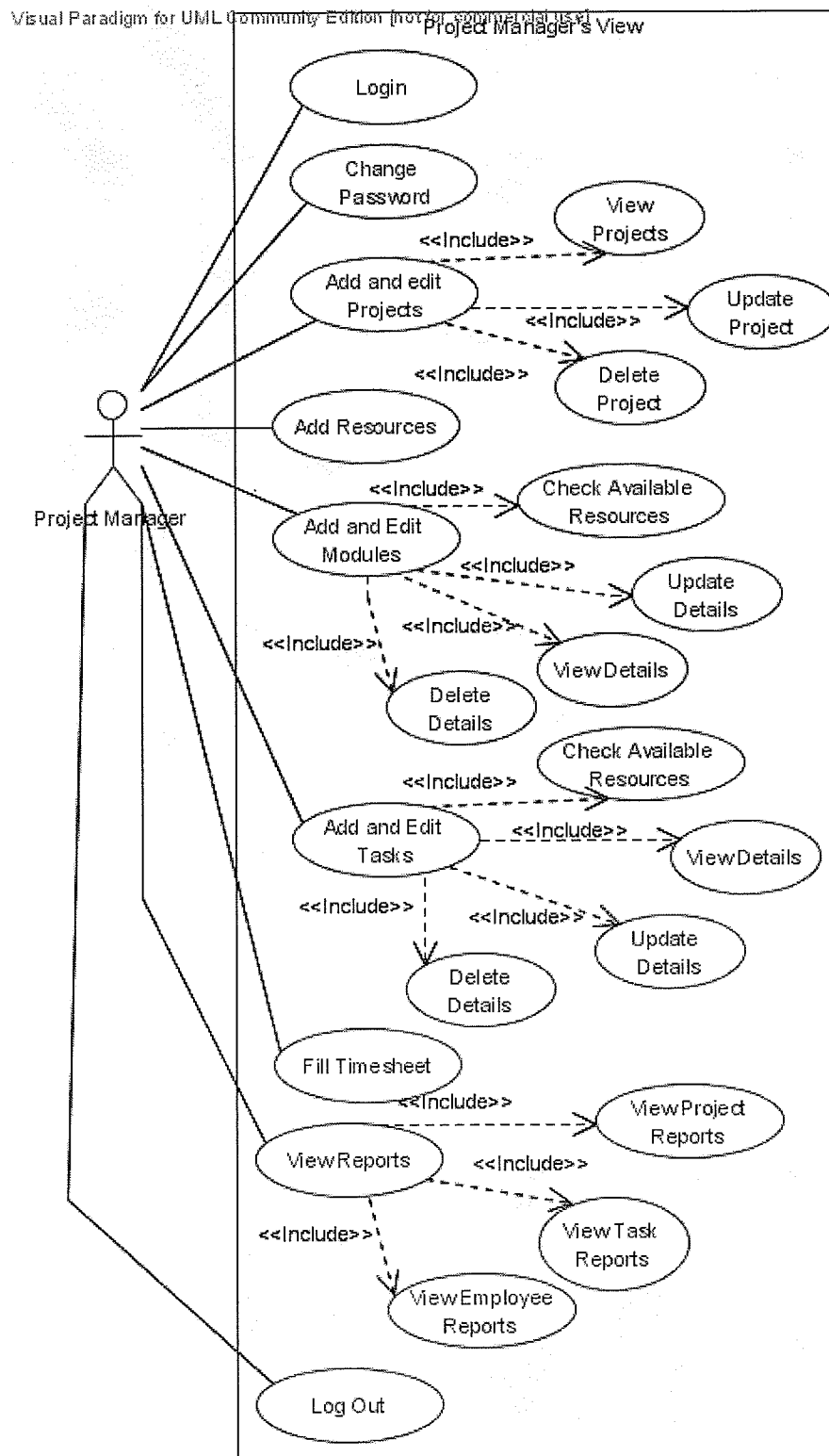


Figure 9. Use Case Diagram for project manager



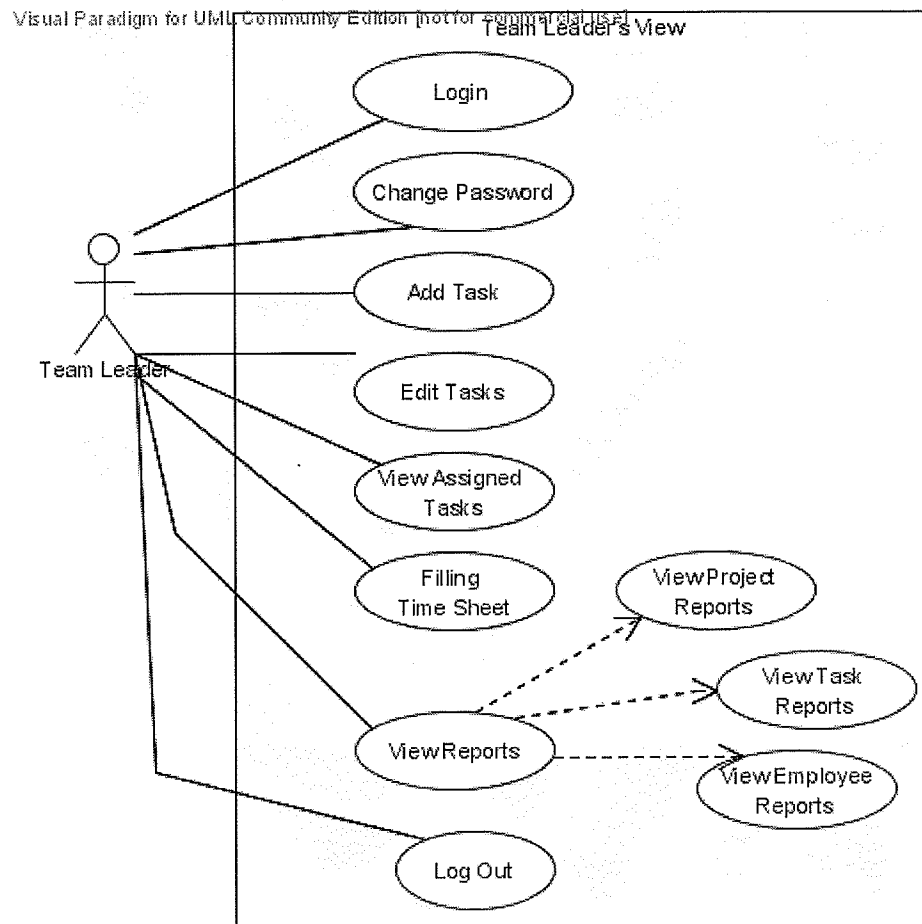
Use case diagram for team leader

Figure 10. Use Case Diagram for team leader

### Use case diagram for team member

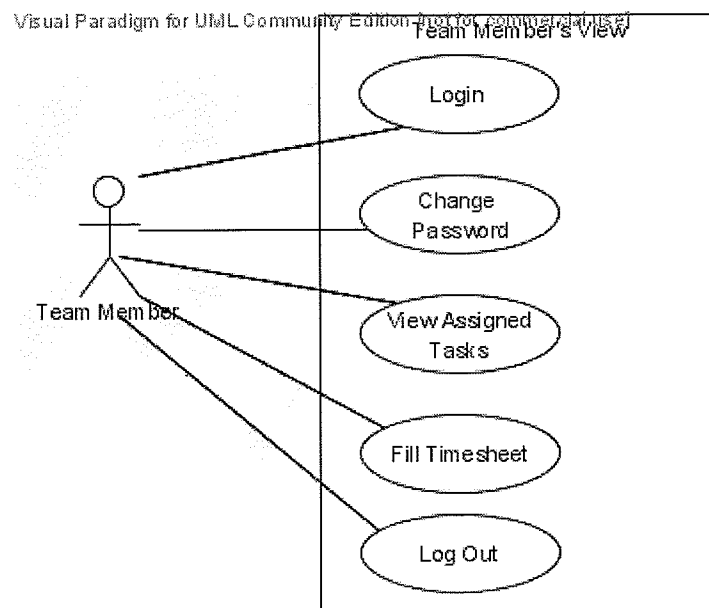


Figure 11. Use Case Diagram for team member

### 3.3.2 Class Diagram

#### Class Diagram for project management tool

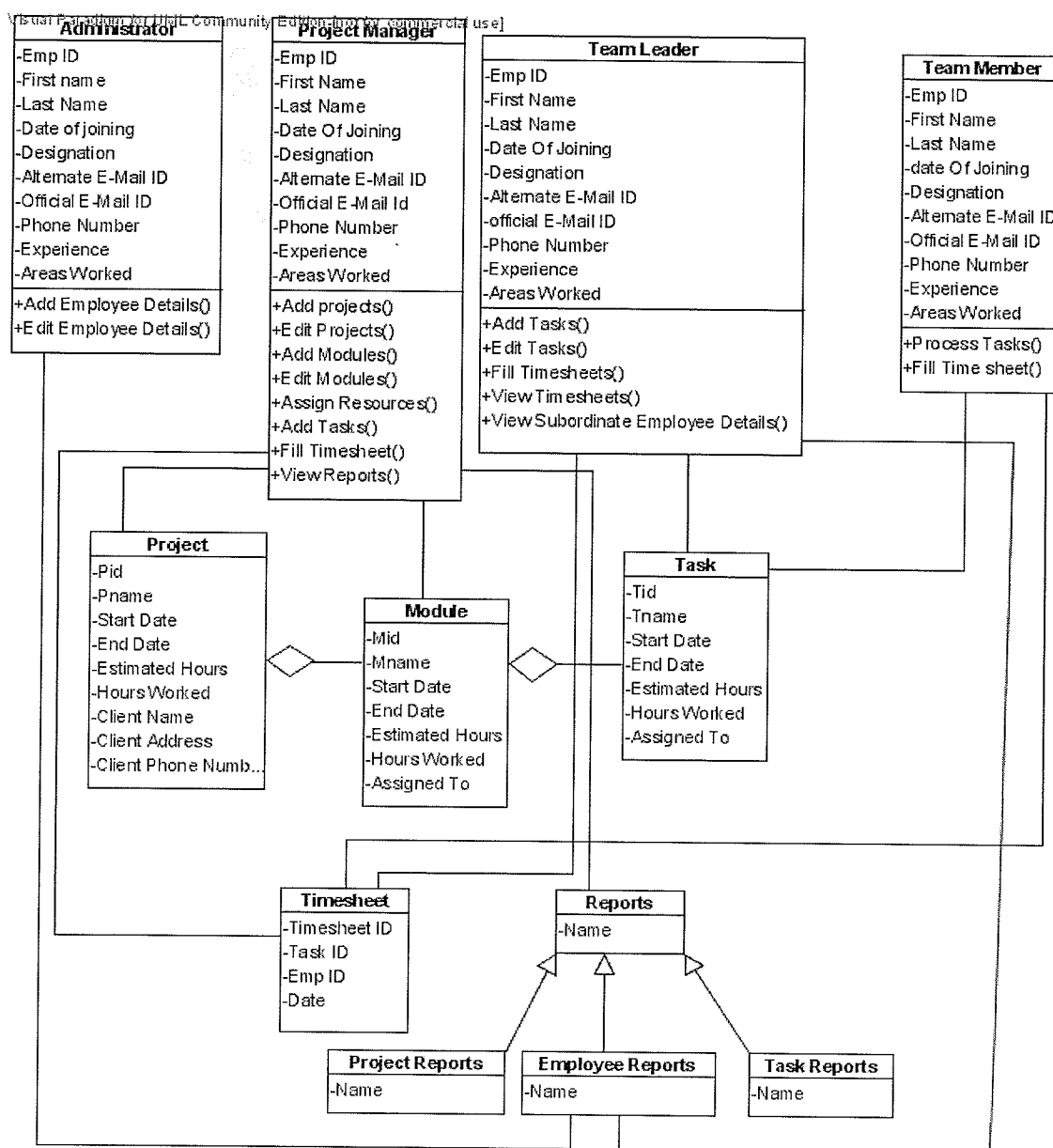


Figure 12. Class Diagram for project management tool

### 3.3.3 Activity Diagrams

#### Activity Diagram for Login module

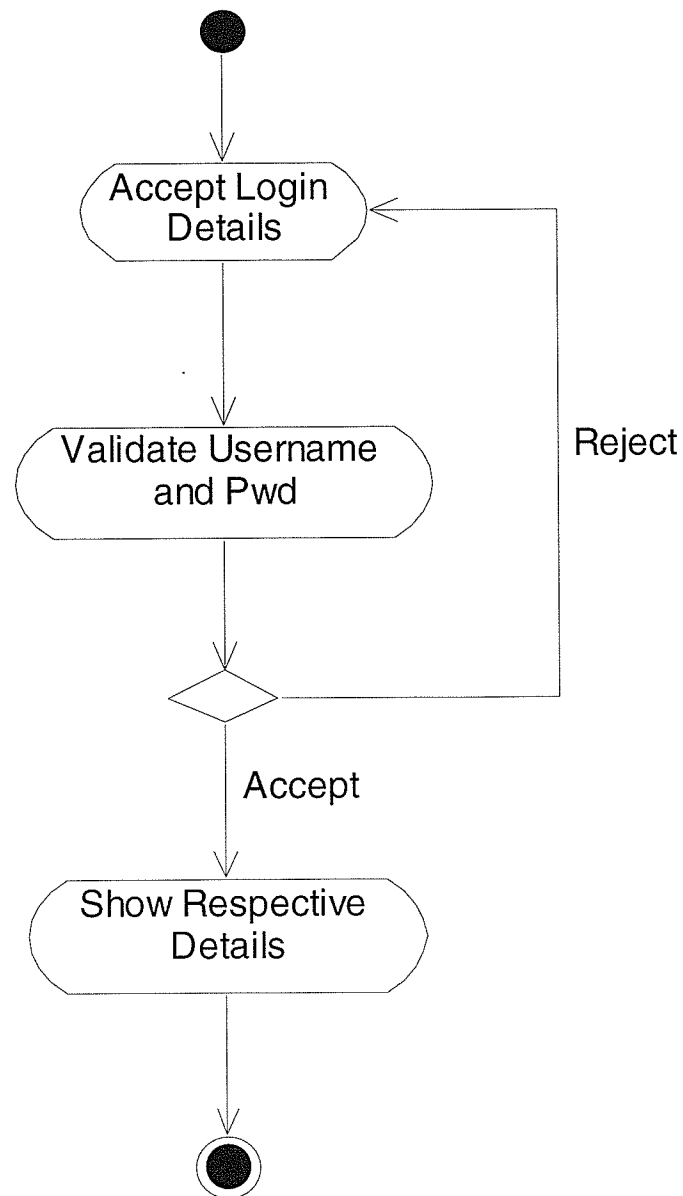


Figure 13. Activity Diagram for Login module

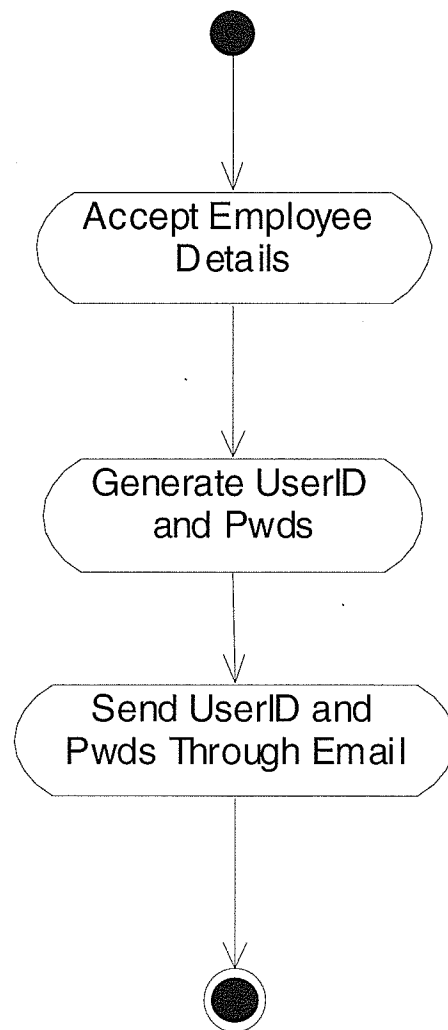
Activity Diagram for Registration module

Figure 14. Activity Diagram for Registration module

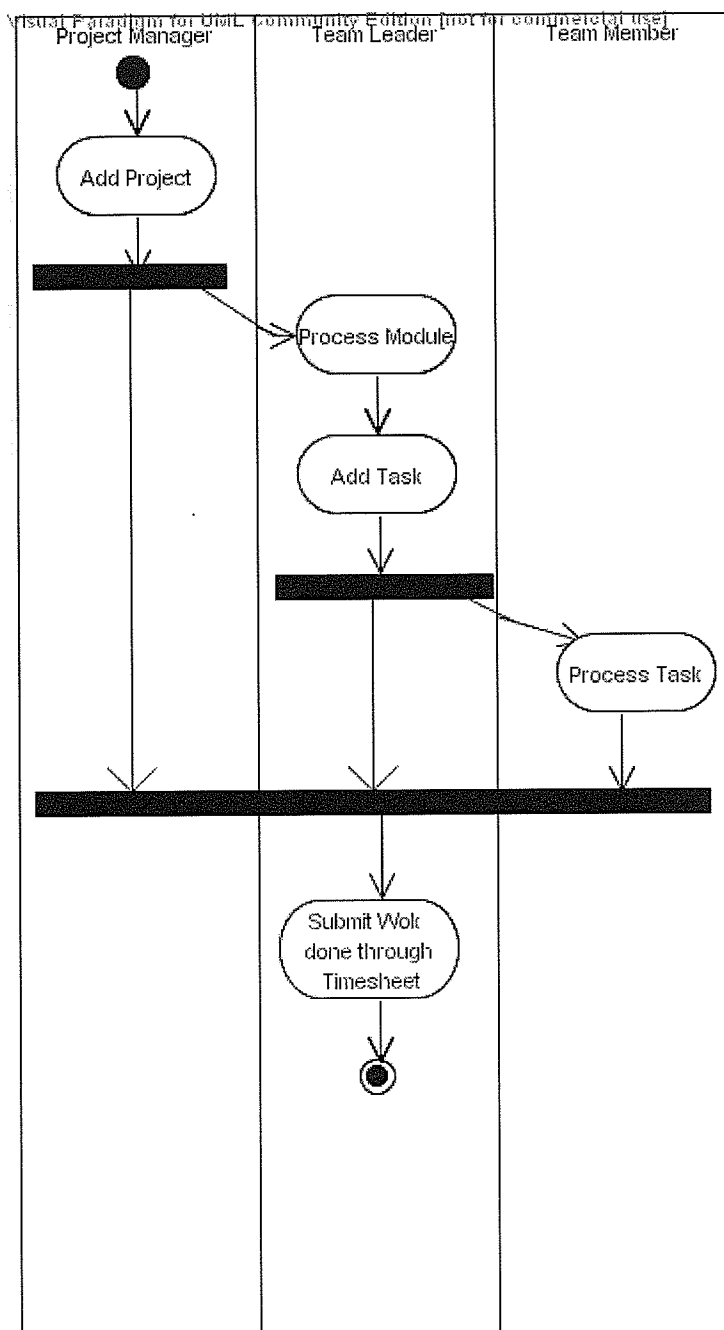
Activity Diagram for Task delegation module

Figure 15. Activity Diagram for Task delegation module

## CHAPTER 4

### IMPLEMENTATION

#### 4.1 Creation of tables

##### 4.1.1 What is Database?

Database is a collection of information that has been systematically organized for easy access and analysis.

##### Database Table

A table can be the basic component of a relational database. It has number of rows and columns, and can usually be manipulated using SQL commands.

The basic key constraints we apply for tables are:

- 1) Primary key
- 2) Foreign key

Primary key: A primary key is a column which uniquely identifies rows in the table. A primary key value cannot be null.

Foreign key: A foreign key is a column in a table that does not uniquely identify rows in a table but is used as a link to matching columns in other tables.

##### 4.1.2 Accessing the database

The information stored in database can be accessed either by using SQL commands or Stored Procedures.

Various SQL commands used are:

- 1) Insert
- 2) Update
- 3) Delete
- 4) Select

##### Insert

Insert command is used to insert rows into tables.

Insert into <table name> values (<value1, value 2.....value n>)

Update

Update command is used to update rows in the tables.

Update <table name> set <value1=new value1, value 2=new value 2.....value n=new value n> where <condition>

Delete

Delete command is used to delete rows from the table.

Delete from <table name> where <condition>

Select

Select command is used to select rows from the table.

Select from <table name> where <condition>

Stored procedure

Stored Procedures are precompiled database queries that improve security, efficiency, usability of client server applications.

**4.1.3 Tables in the Project**

Our project has 13 database tables. They are:

1) Employee Designation table:-

Table 1.Employee Designation table

Field	Datatype	Size
iempid	Integer	4 bytes
idesignationid	Integer	4 bytes

Primary Key: idesignationid  
Foreign Key: iempid

Whenever a new employee is registered then a unique designation id is given and is stored in the above table.

2) Designation table:-

Table 2.Designation table

Field	Datatype	Size
Idesignationid	Integer	4 bytes
Vdesignation	Varchar	255 characters

Primary Key: idesignationid



The employee at the time of registration is also given a designation id and type of designation that is being stored in this table.

### 3) Login Details table:-

Table 3.Login Details table

Field	Datatype	Size
iloginid	Integer	4 bytes
vloginname	varchar	255 characters
vpassword	varchar	255 characters
iempid	Integer	4 bytes
vemptytype	varchar	255 characters

Primary Key: iloginid  
Foreign Key: iempid

When the employee logs on to the tool, his login name and password are being stored in this table.

### 4) Employee type table:-

Table 4.Employee type table

Field	Datatype	Size
iemptytypeid	Integer	4 bytes
vemptytype	Integer	4 bytes

Primary Key: iemptytypeid

At the registration of a particular employee, the emptytype and the emptytypeid are being stored in the above table.

### 5) Employee Details table:-

Table 5.Employee Details table

Field	Datatype	Size
iempid	Integer	4 bytes
vempfirstname	varchar	255 characters
vemplastname	varchar	255 characters
vempaddress	varchar	255 characters
voffemail	varchar	255 characters
valtemail	varchar	255 characters
vphone	varchar	255 characters
sddateofjoin	smalldatetime	4 bytes
barchive	bit	1unit
rexperience	Real	8 bytes

Primary Key: iempid

At the time of registration, all the employee details are being stored in the above table.

6) Project table:-

Table 6.Project Details table

Field	Datatype	Size
Ipid	Integer	4 bytes
Vpname	Varchar	255characters
sdstartdate	Smalldatetime	4 bytes
Sdenddate	Smalldatetime	4 bytes
Vcomments	Varchar	255characters
Vtype	Varchar	255characters
Istatusid	Integer	4 bytes
Iestimatedhours	Integer	4 bytes
Vclientname	Varchar	255characters
Vclientaddress	Varchar	255characters
Vcleintemailid	Varchar	255characters
Vclientphone	Varchar	255characters

Primary Key: ipid

When the Project Manager starts adding the projects, all the details regarding the project are being stored in the above table.

7) Module table:-

Table 7.Module Details table

Field	Datatype	Size
imid	Integer	4 bytes
ipid	Integer	4 bytes
Vmname	Varchar	255characters
iassignedto	Integer	4 bytes
Sdstartdate	Smalldatetime	4 bytes
Sdenddate	Smalldatetime	4 bytes
iactualhours	Integer	4 bytes
iestimatedhours	Integer	4 bytes
istatusid	Integer	4 bytes
Barchive	Bit	1

Primary Key: imid  
Foreign Key: ipid

When the project Manager adds the module, all the above details are being stored in the above table.

8) Status table:-

Table 8.Status table

Field	Datatype	Size
istatusid	Integer	4 bytes
cstatusname	character	1byte

Primary Key: istatusid

In the above Table the Status of the Project, module or the task i.e. either created, in progress or finished is being stored in the above table.

9) Task table:-

Table 9.Task table

Field	Datatype	Size
imid	Integer	4 bytes
itaskid	Integer	4 bytes
vtaskname	Varchar	255characters
iassignedto	Integer	4 bytes
iassignedby	Integer	4 bytes
sdstartdate	Smalldatetime	4 bytes
sdenddate	Smalldatetime	4 bytes
iestimatedlhours	Integer	4 bytes
ihoursworked	Integer	4 bytes
istatusid	Integer	4 bytes
barchive	Bit	1
ipid	Integer	4 bytes

Primary Key: itaskid  
Foreign Key: imid, ipid

Whenever the Project Manager or the Team Leader assigns the tasks, the respective fields are being stored.

10) Resource table:-

Table 10.Resource table

Field	Datatype	Size
Iresourceid	Integer	4 bytes
Ipid	Integer	4 bytes
Iempid	Integer	4 bytes
Iassignedempid	Integer	4 bytes

Primary Key: iresourceid  
Foreign Key: ipid, iempid, iassignedempid

When the Project Manager or the Team Leader can assign the particular resource for a particular project, then the above details are being stored in the table.

#### 11) Miscellaneous Task Table:-

Table 11.Miscellaneous Task

Field	Datatype	Size
iempid	Integer	4 bytes
vtaskname	Integer	4 bytes
sddate	smalldatetime	4 bytes
ihoursworked	Integer	4 bytes
ctype	Character	1byte

Foreign Key: iempid

In case if there are any Miscellaneous Tasks details they are being stored in the above table.

#### 12) ChangeRequest table:-

Table 12.Change Request table

Field	Datatype	Size
ipid	Integer	4 bytes
sdenddate	Smalldatetime	4 bytes
sdlastmodified	Smalldatetime	4 bytes
iestimatedhours	Integer	4 bytes
Icost	Integer	4 bytes

Foreign Key: ipid

If at all the Project Manager wants to extend the due Date or Estimated hours or cost of the Particular Project, then the respective fields would be updated and stored in the above table.

### 13) Timesheet table:-

Table 13.Timesheet table

Field	Datatype	Size
Iempid	Integer	4 bytes
Itaskid	Integer	4 bytes
Sddate	smalldatetime	4 bytes
Ihours	Integer	4 bytes
Ctype	Character	1byte

Foreign Key: iempid, itaskid

At the end of the Day, when each employee starts filling the Timesheet, the respective fields would be stored in the above table.

## 4.2 Implementation of Coding

We used vb.net to code our project.

### Sample code to add employee details and generate mail to users

Private Sub Button1\_Click (ByVal sender As System.Object, ByVal e As System.EventArgs)

Handles Button1.Click

Dim rand As New System.Random (System.DateTime.Now.Millisecond)

Dim str () As String = Split (txtoffemail.Text, "@", -1)

password = str (0) & Math.Floor ((rand.Next / 100000))

'Dim str2 As String = txt\_offemail.Text

'insertion

If (insert\_values\_empdetails () = True) Then

If (insert\_values\_logindetails () = True) Then

For desigcount = 0 To lst\_designame.Items.Count - 1

If lst\_designame.Items (desigcount).Selected Then

Dimdesigid=get\_desigid (lst\_designame.Items (desigcount).Value.ToString)

insert\_values\_empdesignation (desigid)

```

        End If
    Next
Else
    " lblmsg.Text = "Error in inserting record"
End If
End If
email_generation ()

End Sub

#Region "insertion - user code from here"

'insert the values in the table empdetails ()

Private Function insert_values_empdetails () As Boolean
    date1 = Request.Form ("theDate1")
    Try
        cmd = New SqlCommand
        cmd.CommandType = CommandType.StoredProcedure
        cmd.Connection = cn
        cmd.CommandText = "proc_empdetails"
        cmd.Parameters.Add ("@firstname", txtfname.Text)
        cmd.Parameters.Add ("@lastname", txtlname.Text)
        cmd.Parameters.Add ("@address", txtaddr.Text)
        cmd.Parameters.Add ("@offemail", txtoffemail.Text)
        cmd.Parameters.Add ("@altemail", txtaltemail.Text)
        cmd.Parameters.Add ("@phone", CInt (txtpno.Text))
        cmd.Parameters.Add ("@dateofjoin", date1)
        cmd.Parameters.Add ("@archive", 1)
        cmd.Parameters.Add ("@experience", txtexp.Text)
        cmd.Parameters.Add ("@areasworked", txtareas.Text)
        If cn.State = ConnectionState.Open Then
            cn.Close ()

```



```

End If
cn.Open ()
If cmd.ExecuteNonQuery () > 0 Then
    lbl_msg.Text = "Details EnteredSucessfully"
    Return True
End If
Catch ex As Exception
    Return False
Finally
    cn.Close ()
End Try
End Function

```

'insertion into login details table

```

Private Function insert_values_logindetails () As Boolean
    Dim emptyeid As Integer
    get_emptyeid(ddl_emptytype.SelectedItem.Value)
    Try
        cmd = New SqlCommand
        cmd.CommandType = CommandType.StoredProcedure
        cmd.Connection = cn
        cmd.CommandText = "proc_logindetails"
        cmd.Parameters.Add("@loginname",txtoffemail.Text)
        cmd.Parameters.Add("@password", password)
        cmd.Parameters.Add("@empid", get_eid())
        cmd.Parameters.Add("@emptyeid", emptyeid)
        If cn.State = ConnectionState.Open Then
            cn.Close()
        End If
        cn.Open()
    
```

```

    If cmd.ExecuteNonQuery() > 0 Then
        Return True
    End If
Catch ex As Exception
    Return False
Finally
    cn.Close()
End Try
End Function

```

'insertion into empdesignation table

```

Private Function insert_values_empdesignation(ByVal empdesigid As String) As Boolean
    Dim empid As Integer = get_eid()
    If empid <> 0 Then
        Try
            cmd = New SqlCommand
            cmd.CommandType = CommandType.Text
            cmd.Connection = cn
            cmd.CommandText = "insert into
                                empdesignation values(
                                & empid & "," & empdesigid
                                & ")"
            If cn.State = ConnectionState.Open Then
                cn.Close()
            End If
            cn.Open()
            If cmd.ExecuteNonQuery() > 0 Then
                Return True
            End If
        Catch ex As Exception

```

```
        Return False
    Finally
        cn.Close()
    End Try
Else
    Return False
End If
End Function

'retrieve empid from empdetails

Private Function get_eid() As Integer
    Dim eid As Integer
    Try
        cmdeid = New SqlCommand
        With cmdeid
            .CommandType = CommandType.Text
            .Connection = cn
            .CommandText = "select iempid from
                            empdetails"
        End With
        If cn.State = ConnectionState.Open Then
            cn.Close()
        End If
        cn.Open()
        dr = cmdeid.ExecuteReader()
        While (dr.Read())
            eid = CInt(dr("iempid"))
        End While
        Return eid
    End Try
```

```
Catch ex As Exception
    Return 0
Finally
    cn.Close()
End Try
End Function

Private Function get_desigid(ByVal designation As
                             String) As Integer

    Try
        cmd = New SqlCommand
        With cmd
            .CommandType = CommandType.Text
            .Connection = cn
            .CommandText = "select idesignationid from
                           designation where
                           vdesignation='" &
                           designation & "'"

        End With
        If cn.State = ConnectionState.Open Then
            cn.Close()
        End If
        cn.Open()
        Dim id As Integer = cmd.ExecuteScalar()
        Return id
    Catch ex As Exception
    Finally
        cn.Close ()
    End Try
End Function
```

'getting emptytype id from emptytype

Private Function get\_emptytypeid (ByVal emptytype As String)

As Integer

Try

cmd = New SqlCommand

With cmd

.CommandType = CommandType.Text

.Connection = cn

.CommandText = "select iemptytypeid from

emptytype where

vemptytype="" & emptytype & ""

End With

If cn.State = ConnectionState.Open Then

cn.Close()

End If

cn.Open()

Dim id As Integer = cmd.ExecuteScalar()

Return id

Catch ex As Exception

Finally

cn.Close()

End Try

End Function

Sub update\_emptytypecombo()

Try

cmd = New SqlCommand

cmd.CommandType = CommandType.Text

cmd.Connection = cn

cmd.CommandText = "select vemptytype from

```
                                emptytype"

cn.Open()
dr = cmd.ExecuteReader
While (dr.Read())
    ddl_emptytype.Items.Add(dr(0))
End While

Catch ex As Exception
    MsgBox(ex.Message)
Finally
    cn.Close()
    dr.Close()

End Try

End Sub

Sub designation_listbox()
    Try
        cmd = New SqlCommand
        cmd.CommandType = CommandType.Text
        cmd.Connection = cn
        cmd.CommandText = "select vdesignation from
                                designation"

        cn.Open()
        dr = cmd.ExecuteReader
        While (dr.Read())
            lst_designname.Items.Add(dr(0))
        End While

    Catch ex As Exception
        MsgBox(ex.Message)
```

```
Finally
    cn.Close()
    dr.Close()
End Try
End Sub
#End Region
Private Function email_generation()
    ' lblmsg.Text = password
    Dim obj As MailMessage
    obj = New MailMessage
    obj.From = getfrom()
    obj.To = txtaltemail.Text
    obj.Subject = "request for PMT registration"
    Dim str As String = "<a href='http://localhost/pmt/login.aspx'>click me</a>"
    obj.Body = "UserId: " & txttoffemail.Text & "Password: " & password & str & " ."
    obj.Priority = MailPriority.High
    obj.BodyFormat = MailFormat.Html
    Mail.SmtpMail.Send(obj)
End Function
```

## CHAPTER 5

### SCREENS

#### Login Page

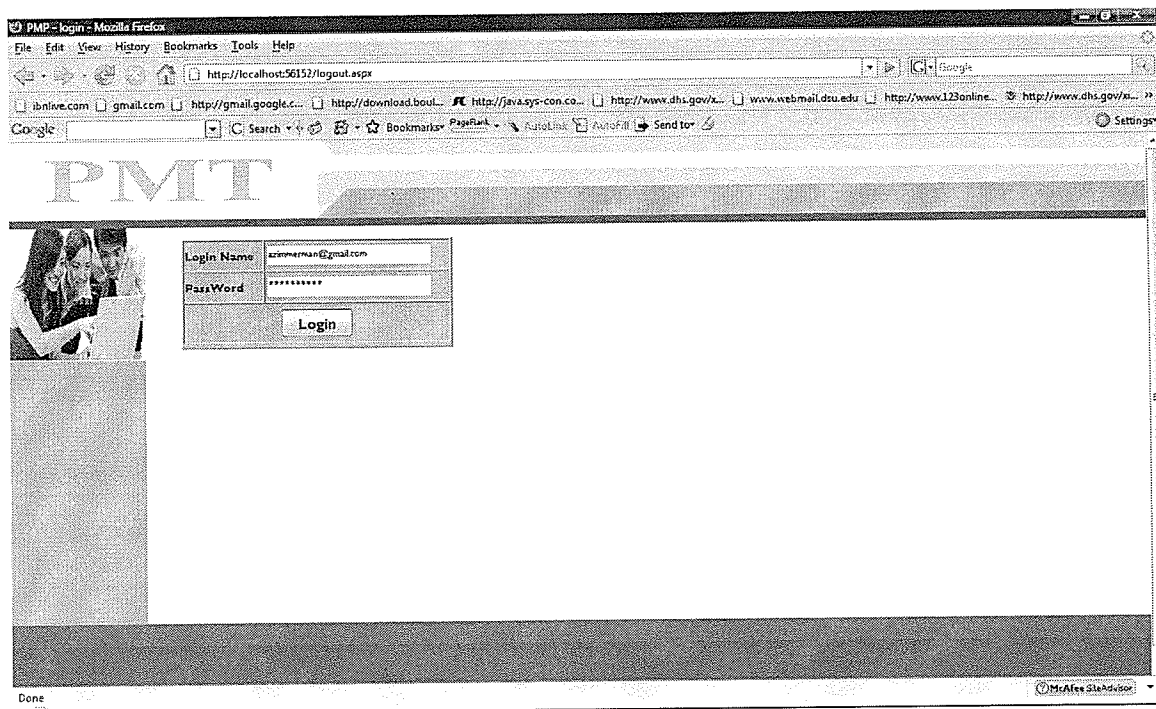


Figure 16. Login screen

Through Login screen employees access the project management tool. Login name and password will be used for authenticating employees. Once Authentication is done, based on the type of the Employee i.e. Administrator, Project Manager, Team Leader and Team member, the user will be directed to their respective modules.



### Welcome page for Administrator

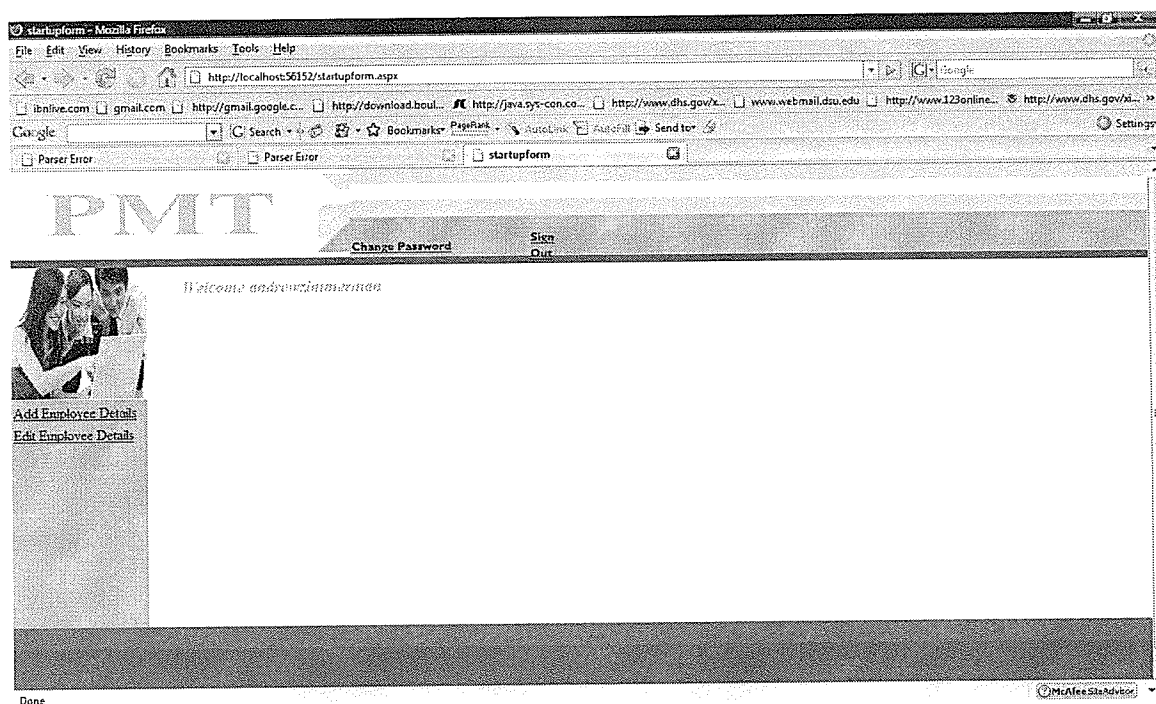


Figure 17. Administrator home page

This is the welcome page for the administrator. Administrator is the person who introduces new employees to the project management tool. He is responsible for maintaining the employee details. He can add or edit the employee details.

## Add Employee Details Form

The screenshot shows a web browser window with the URL `http://localhost:56152/adminaddemployee.aspx`. The page features a header with the 'PMT' logo and navigation links for 'Change Password' and 'Sign Out'. On the left, there is a sidebar with a small image of two people and links for 'Add Employee Details' and 'Edit Employee Details'. The main content area displays a 'Registration Form' with the following fields:

First Name	<input type="text"/>
Last Name	<input type="text"/>
Date Of Join	<input type="text"/>
Designation Name	Administrator projectmanager technical lead
Emp Type	<input type="text"/>
Address	<input type="text"/>
Official Email	<input type="text"/>
Alternate E-Mail ID	<input type="text"/>
Phone Number	<input type="text"/>
Experience	<input type="text"/>
Areas Worked	<input type="text"/>

Figure 18. Add Employee Details form

This form is used by Administrator for registering the employees. Whenever a new employee joins the organization administrator enters all the details like employee First name, Last name, Date of joining, Designation, Employee Type, Official E-Mail ID, Alternate E-Mail ID, Employee Phone Number, Experience, Areas Worked etc. After entering the details, the Module will automatically register the employee to the tool. It generates username and password randomly and sends the same to the employee mail box along with URL (uniform resource locator).

## Edit Employee Details Form

admineditdetails - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:56152/admineditdetails.aspx

Google

ibnlive.com gmail.com http://gmail.google.c... http://download.boul... http://java.sys-con.co... http://www.dhs.gov/x... www.webmail.dsu.edu http://www.123online... http://www.dhs.gov/x...

Google Search Bookmarks PageRank Autolink AutoFill Send to Settings

**PMT**

Change Password Sign Out

Search By Id Search Search By Name Search

**EDIT EMPLOYEE DETAILS**

sno	id	Name	Official e-mail	Phone number			Delete
1	1026	jeffrey archer	jarcher@gmail.com	2245679087	<a href="#">View</a>	<a href="#">Update</a>	<a href="#">Delete</a>
2	1027	andrew zimmerman	azimmerman@gmail.com	2715829978	<a href="#">View</a>	<a href="#">Update</a>	<a href="#">Delete</a>
3	1028	samantha brown	sbrown@yahoo.com	2715233498	<a href="#">View</a>	<a href="#">Update</a>	<a href="#">Delete</a>

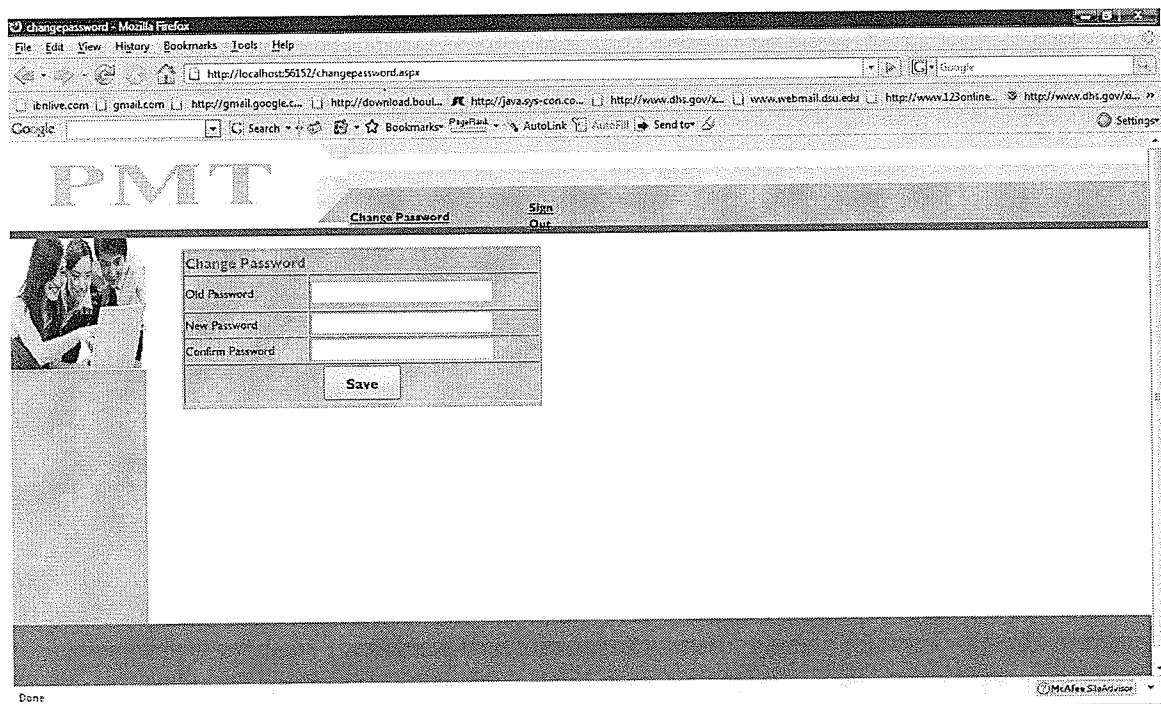
1 2 3 4 2

Done McAfee SiteAdvisor

Figure 19. Edit Employee Details form

This form is used by administrator to edit the details of existing employees. Administrator can view the details of the employee. Administrator can update the details of the employee, like a change in Designation, phone number and address etc. Administrator can remove the employees from the tool.

## Change Password Form



The screenshot shows a Mozilla Firefox browser window with the address bar displaying `http://localhost:56152/changepassword.aspx`. The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The address bar also shows a search engine dropdown set to Google. The browser's toolbar includes buttons for back, forward, home, stop, and search, as well as a search engine dropdown. The browser's status bar at the bottom shows "Done" and a McAfee SiteAdvisor icon.

The web page has a header with the text "PMT" in large, bold, serif font. Below the header, there is a navigation bar with the text "Change Password" and "Sign Out".

The main content area contains a "Change Password" form. The form has three input fields: "Old Password", "New Password", and "Confirm Password". Below these fields is a "Save" button. To the left of the form is a small image of two people looking at a computer screen.

Figure 20. Change password form

This form is used by the employees to change their password. When the employee logs into the PMT for the first time with the user id and password that are randomly generated, he will be given an option to change his password.

## Welcome Page For Project Manager

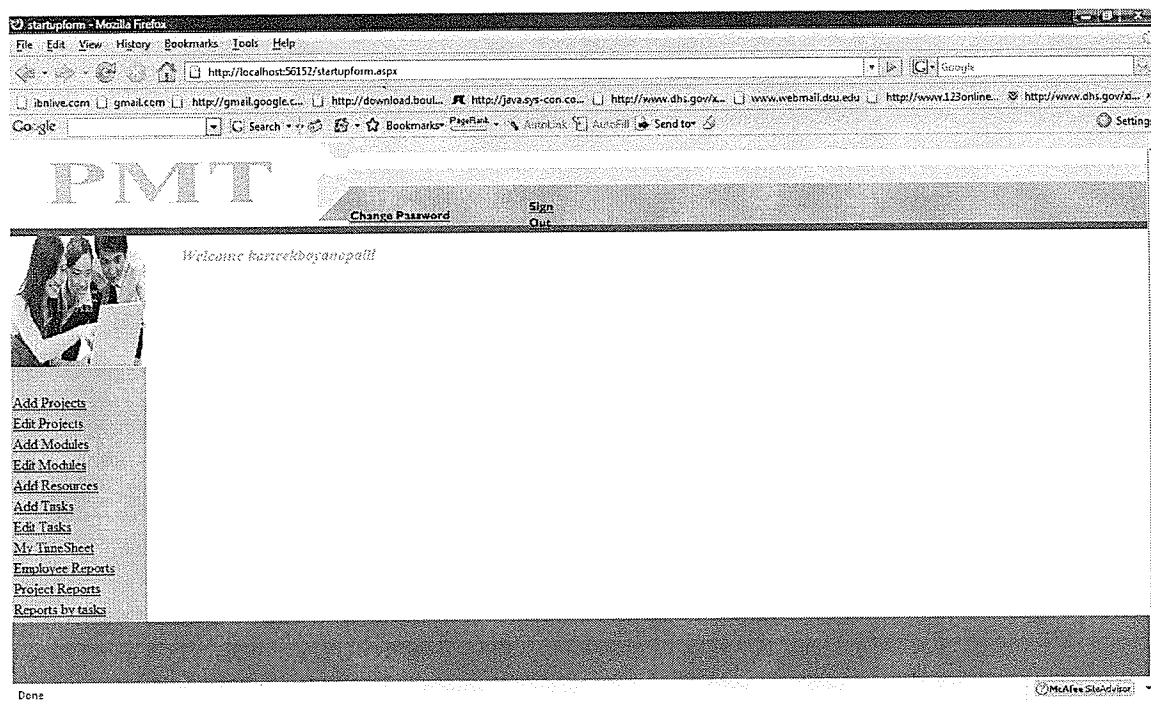


Figure 21. Project Manager home page

This is the welcome page for the project manager. Project manager can add and edit projects, modules and tasks. Project manager can resources for the projects, tasks and modules. He can access different types of reports like, employee reports, project reports and task reports.

## Adding Projects Form

The screenshot shows a web browser window with the title 'addingprojects - Mozilla Firefox'. The address bar shows 'http://localhost:56152/adminaddingprojects.aspx'. The browser's toolbar includes buttons for back, forward, home, search, and various toolbars like Bookmarks, PageRank, AutoLink, and AutoFill. The main content area features the 'PMT' logo and a navigation menu on the left with links: Add Projects, Edit Projects, Add Modules, Edit Modules, Add Resources, Edit Tasks, My TimeSheet, Employee Reports, Project Reports, and Reports by tasks. The central 'ADD PROJECTS' form contains the following fields:

Project Name	<input type="text"/>
Start Date	<input type="text"/>
End Date	<input type="text"/>
Project Type	<input type="text" value="Basic"/>
Assigned To	<input type="text" value="jeffrey archer"/>
Estimated hours	<input type="text"/>
Comments	<input type="text"/>
Client Name	<input type="text"/>
Client Address	<input type="text"/>
Client Phone Number	<input type="text"/>

At the bottom of the browser window, the status bar shows 'Done' and 'Mozilla Standard'.

Figure 22. Adding projects form

This form is used by the project manager for adding new projects. After a project is signed by the organization it is assigned to project manager. Project manager estimates the cost and time and adds the projects to the tool.

## Project Manager Adding Modules Form

The screenshot shows a web browser window titled "adminupdate - Mozilla Firefox". The address bar displays "http://localhost:56157/assignmodules.aspx". The browser's toolbar includes a search bar with "Google" and various navigation and utility buttons like "Back", "Forward", "Home", "Stop", "Reload", "Print", "Find", "Bookmarks", "History", "Settings", and "Send to".

The main content area features a large "PMT" logo on the left. To its right are links for "Change Password" and "Sign Out". Below the logo is a vertical menu with the following items: "Add Projects", "Edit Projects", "Add Modules", "Edit Modules", "Add Resources", "Add Tasks", "Edit Tasks", "My TimeSheet", "Employee Reports", "Project Reports", and "Reports by tasks".

The central part of the page is the "ASSIGN MODULES" form. It contains the following fields and controls:

- Project:** A dropdown menu with "pmt" selected.
- Module:** An empty text input field.
- Status:** A dropdown menu with "created" selected.
- Assigned To:** A dropdown menu with "samantha brown (technical member)" selected, and a "Choose" button next to it.
- Start Date:** A text input field with a "..." button to its right.
- End Date:** A text input field with a "..." button to its right.
- Estimated Hours:** A text input field.
- Buttons:** "OK" and "Cancel" buttons at the bottom of the form.

The status bar at the bottom of the browser window shows "Done" on the left and "McAfee SiteAdvisor" on the right.

Figure 23. Project Manager Adding Modules form

This form is used by project manager for assigning the modules to team leaders. Generally, Projects are divided into modules. Project manager assigns a module under a project to a particular team leader and keeps track of its status

## Project Manager Adding Tasks Form

The screenshot displays the 'Assign Tasks' form within the PMT web application. The browser window is titled 'assigntasks - Mozilla Firefox' and shows the URL 'http://localhost:50152/assigntasks.aspx'. The form is titled 'Assign Tasks' and contains the following fields:

- Project Name:** A dropdown menu with 'pmt' selected.
- Module Name:** A text input field.
- Task Name:** A text input field.
- Assigned To:** A dropdown menu with 'samantha brown (technical men)' selected. Below it is a link 'Click Available Resources'.
- Start Date:** A date picker field.
- End Date:** A date picker field.
- Estimated Hours:** A text input field.
- OK:** A button to submit the form.

On the left side of the form, there is a sidebar with a list of links:

- Add Projects
- Edit Projects
- Add Modules
- Edit Modules
- Add Resources
- Add Tasks
- Edit Tasks
- My TimeSheet
- Employee Reports
- Project Reports
- Reports by tasks

The bottom of the browser window shows the Windows taskbar with the 'Done' button and several open applications: 'pmt (Running)', 'PMT documentation', 'Norton Security Scan', 'SQL Server Enterprise', and 'assigntasks - Mozilla Firefox'. The system clock shows '4:11 9:19 PM'.

Figure 24. Project Manager Adding Tasks form

For team leader to work on the module he needs group of team members. So, project manager assigns team members to team leaders. Project manager assigns tasks to his subordinates..



## Project Reports

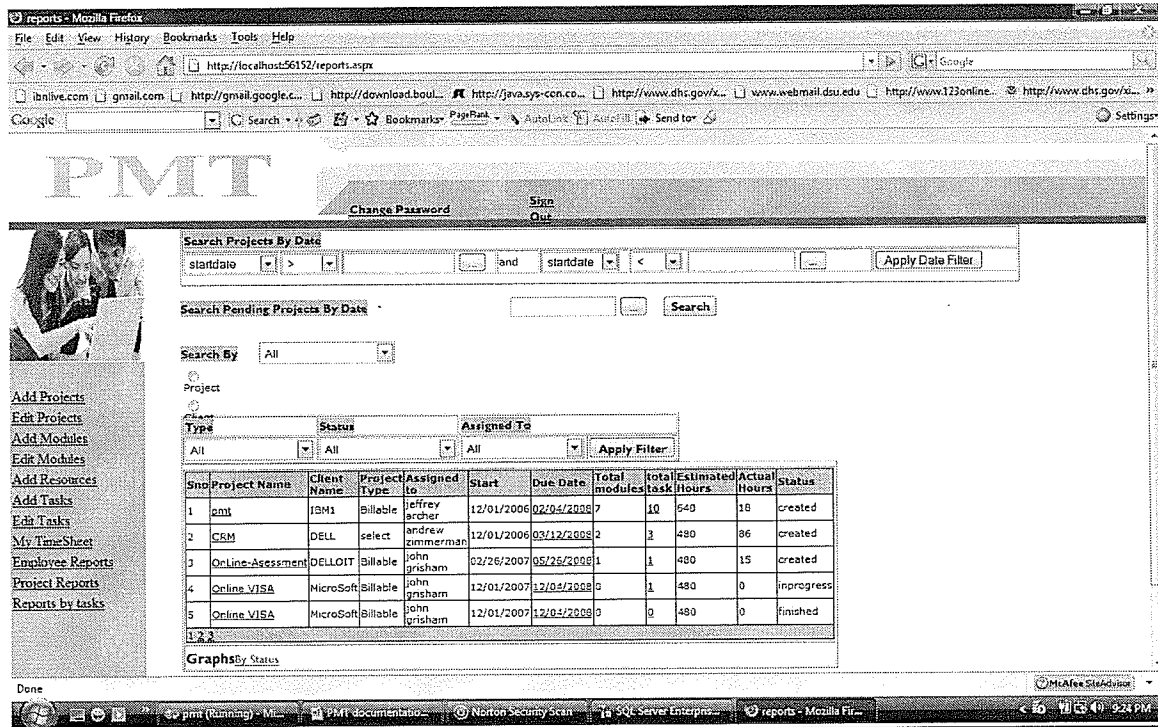


Figure 25. Project Reports form

In the project reports, we can view the details like total no. of modules, tasks, status of the project, number of due date extensions, assigned users. One can also view the detailed description of all the modules and tasks involved in each project.

In addition to above features for the retrieval of the data in the desired fashion we go for filters. The filters provided here are

- Based on type of the project (Billable/Non Billable).
- Status of the project.
- Based on assigned to.

## Task Reports

The screenshot displays the PMT (Project Management Tool) interface in a Mozilla Firefox browser. The page title is "PMT". Below the title, there are links for "Change Password" and "Sign Out". The main content area shows a table of tasks with the following columns: SNo, Taskname, projectname, Assignedto, Assignedby, StartDate, EndDate, and Status. The table contains 5 rows of data. Above the table, there are filters for Project (All), Employee (All), and Status (All), along with an "Apply Filter" button. On the left side, there is a sidebar with links for "Add Projects", "Edit Projects", "Add Modules", "Edit Modules", "Add Resources", "Add Tasks", "Edit Tasks", "My TimeSheet", "Employee Reports", "Project Reports", and "Reports by tasks".

SNo	Taskname	projectname	Assignedto	Assignedby	StartDate	EndDate	Status
1	create login details form	CRM	jeffrey archer	jeffrey archer	03/12/2007	03/12/2007	finished
2	design usecases	WDT	samantha brown	jeffrey archer	03/12/2007	03/12/2007	created
3	debug registration form	CRM	samantha brown	jeffrey archer	03/12/2007	03/12/2007	finished
4	test registration form	pmt	samantha brown	jeffrey archer	03/12/2007	03/12/2007	created
5	design class diagram	pmt	jeffrey archer	jeffrey archer	04/12/2007	05/12/2007	created

Figure 26. Task Reports form

Task reports give overall tasks carried out in the organization by all employees. Here also we applied filters based on projects, status and assigned to.

## Employee Reports

The screenshot shows a web application titled 'PMT' with a navigation menu on the left including links like 'Add Projects', 'Edit Projects', 'Add Modules', 'Edit Modules', 'Add Resources', 'Add Tasks', 'Edit Tasks', 'My TimeSheet', 'Employee Reports', 'Project Reports', and 'Reports by tasks'. The main content area displays an 'Employee Reports' form with search filters for Designation (All), Experience (All), and Areas Worked. Below the filters, a table lists 5 employees. The table has columns: Sno, First Name, Last Name, Date Of Join, Designation, Official Email ID, Alternate Email, Address, PhoneNo, Experience(in years), and Areas Worked.

Sno	First Name	Last Name	Date Of Join	Designation	Official Email ID	Alternate Email	Address	PhoneNo	Experience(in years)	Areas Worked
1	jeffrey	archer	05/05/2005	projectmanager	jarcher@gmail.com	jarcher@yahoo.com	123 sunside ave san jose	22456799087	3	java
2	andrew	zimmerman	12/03/1985	Administrator	azimmerman@gmail.com	azimmerman@yahoo.com	123 beach road newyork	2715029970	2	java
3	samantha	brown	10/04/2006	technical member	sbrown@yahoo.com	sbrown@gmail.com	456 downtown atlanta	2715233498	2	java
4	dan	brown	11/01/2007	technical lead	dbrown@gmail.com	dbrown@yahoo.com	678 sunny valley california	2326260267	2	java
5	john	grisham	02/03/2005	technical member	jgrisham@gmail.com	jgrisham@yahoo.com	123 south road georgia	2348705776	2	java

Figure 27. Employee Reports form

Employee reports give the details of all the employees in the organization. i.e currently working and ex-employees.

Project Manager and Administrator can view all the employee details but team leader is restricted to view only his sub-ordinate's details. By seeing the employee reports one can view the total no. of employees.

## Employee Reports With Designation As Filter

The screenshot shows a web application interface for 'PMT'. The browser window is titled 'adminupdate - Mozilla Firefox' and the URL is 'http://localhost:56152/employeereports.aspx'. The application has a sidebar with links: Add Projects, Edit Projects, Add Modules, Edit Modules, Add Resources, Edit Tasks, My TimeSheet, Employee Reports, Project Reports, and Reports by tasks. The main content area features a table of employee data. Above the table, there are filters for 'Designation' (set to 'All') and 'Experience' (set to 'All'), with an 'Apply Filter' button. There is also a search bar labeled 'Areas Worked' with a 'Search' button. The table has 11 columns: Sno, First Name, Last Name, Date Of Join, Experience, ID, Alternate Email, Address, PhoneNo, Experience(in years), and Areas Worked. The table lists 5 employees:

Sno	First Name	Last Name	Date Of Join	Experience	ID	Alternate Email	Address	PhoneNo	Experience(in years)	Areas Worked
1	jeffrey	archer	05/05/2001	0-1		larcher@yahoo.com	123 sunside ave san jose	2245679087	3	java
2	andrew	zimmerman	12/03/1985	2-3	Administrator	azimmerman@gmail.com	123 beach road newyork	2715029570	2	java
3	samantha	brown	10/04/2004	3-4	technical member	sbrown@yahoo.com	456 downtown atlanta	2715233498	2	java
4	dan	brown	11/01/2007	4-5	technical lead	dbrown@gmail.com	678 sunny valley california	2326260267	2	java
5	john	grisham	02/03/2005	5-10	technical member	jgrisham@gmail.com	123 south road georgia	2348705776	2	java

The table also shows a 'Currently Working' dropdown menu and an 'Apply Filter' button. The bottom of the screenshot shows the Windows taskbar with various applications running, including 'pmt (Running)', 'PMT documentation', 'Norton Security Scan', 'SQL Server Enterprise', and 'adminupdate - Moz...'.

Figure 28. Employee Reports with Designation as filter

To get specific information, here also we can apply filters. The filters provided here are based on designation and experience. Here, we can also search people based on their specialization.

## Welcome Page of Team Leader

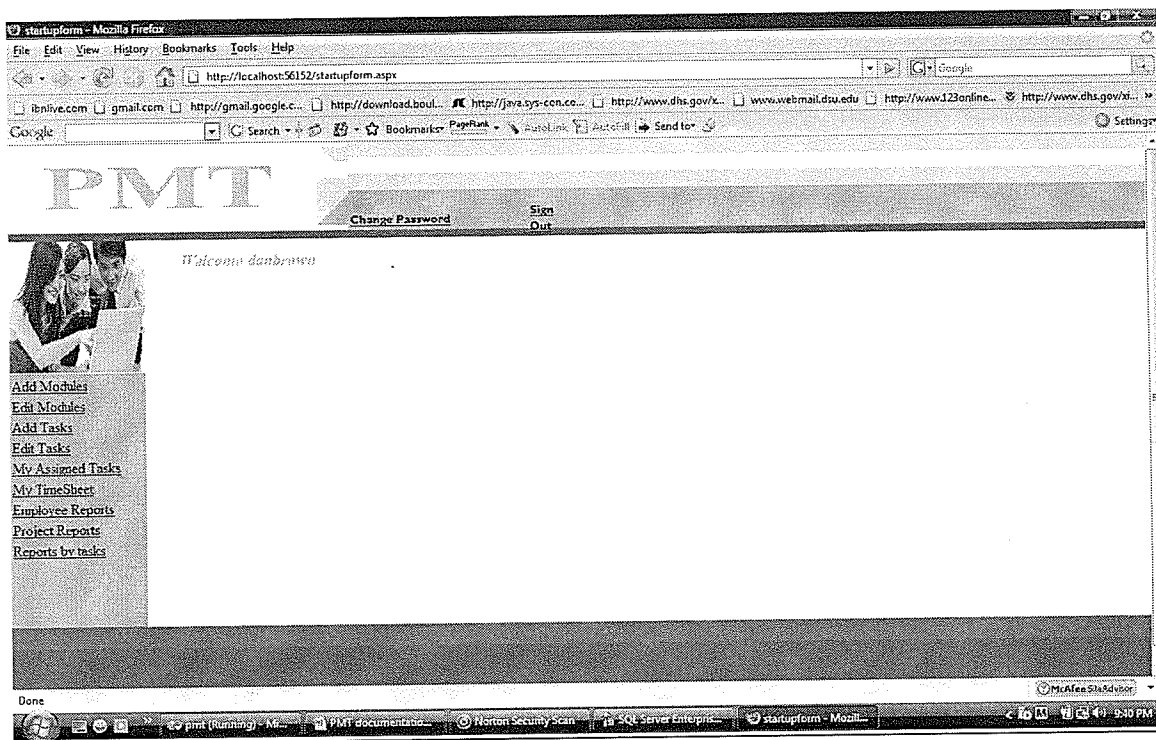


Figure 29. Team leader home page

This is the Welcome page for the Team leader. After the team leader is being assigned a module, he divides the module into tasks, and assigns them to team members. At the end of the day team leader fills timesheet which keeps track of hours worked by him.

### Welcome Page of Team Member

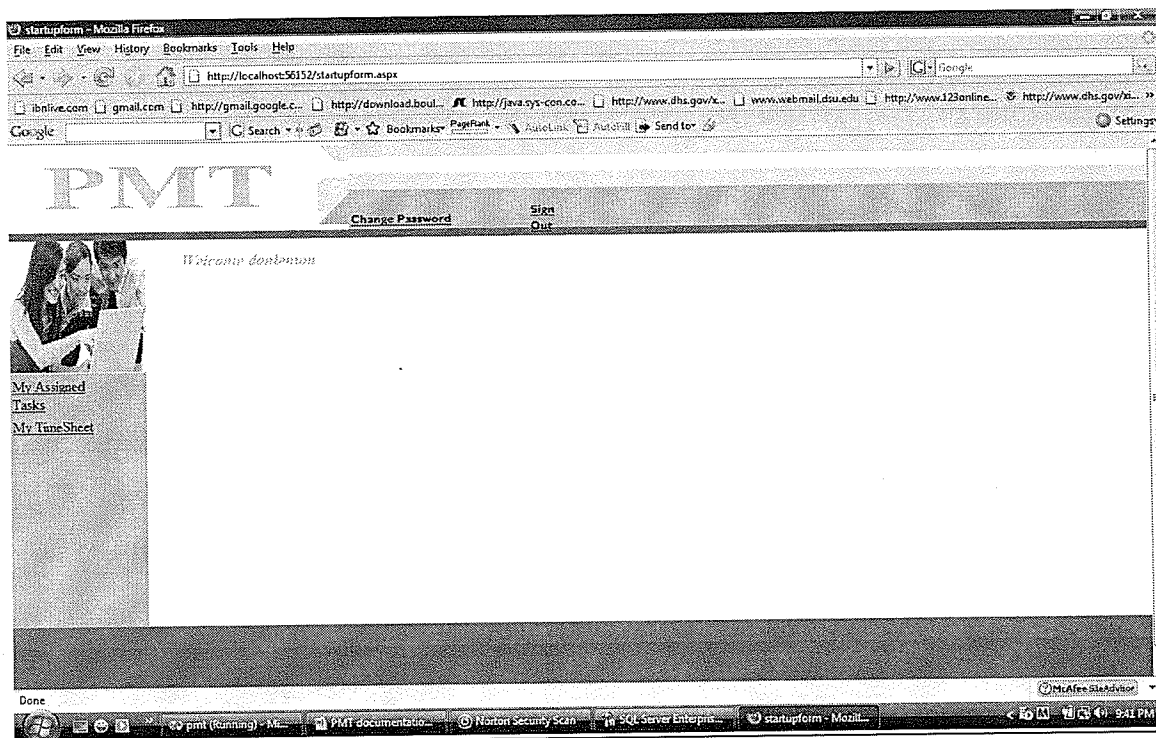


Figure 30. Team Member home page

This is the Welcome page for the Team member. Team member can view all the tasks assigned to him by his superiors and works on those tasks, after the completion of the tasks he submits them by filling time sheet.

## CHAPTER 6

### TEST CASES

#### **6.1 Test Case for Administrator:**

The Administrator login page is created and validated. When the Administrator registers an Employee, a mail is generated to the inbox of the Employee providing the loginid and password .And, it is tested.

#### **6.2 Test Case for Project Manager:**

The Project Manager login page is created and validated. Then, the Project Manager can login and view the stored content in the Database through his interface and he can as well add the content to the Database .The Database is created using SqlServer and it is tested.

#### **6.3 Test Case for Team Leader:**

The Team Leader login page is created and validated. Then, the Team Leader can login and view the stored content in the Database through his interface and he can as well add the content to the Database. The Database is created using SqlServer and it is tested.

#### **6.4 Test Case for Team Member:**

The Team Member login page is created and validated. Then, the Team Member can login and view the stored content in the Database through his interface and he can as well add the content to the Database .The Database is created using SqlServer and it is tested.

## CHAPTER 7

### CONCLUSION AND FUTURE ENHANCEMENTS

**Conclusion:**

This Tool can now be used by any organization for effective monitoring of the projects. Using this tool, Project Manager and Team Leader can delegate tasks to their subordinates. The actual number of working hours of the Employees is tracked effectively through Timesheets and the Required Status can be viewed by the Project, Employee and Task by Reports.

**Future Enhancements:**

1. Discussion Forum: This feature helps to carry out effective communication between employees.
2. Message Board: This feature enables an employee to post any important article so that it can be viewed by all the employees in the organization.



## REFERENCES

### Textbooks

- 1) Matthew MacDonald, ASP.net Complete Reference, Tata McGraw-Hill publications, 2002
- 2) G.Andrew Duthie,Microsoft Asp.net,Step by Step, Eastern Economy, Tata McGraw-Hill Publishing Company,Hyderabad,2002..

### Reference books

GregBuczek,Mcsp,MCT, ASP Developers Guide, Tata McGraw-Hill Publishing Company,Hyderabad,2002..

### Websites

<http://www.aspdeveloper.net/tiki-index.php>

<http://www.startvbdotnet.com/>

<http://programmerworld.net/dotnet/books.htm>

## APPENDICES

### APPENDIX-1

#### Dot Net

.NET is the Microsoft Web services strategy to connect information, people, systems, and devices through software. Integrated across the Microsoft platform, .NET technology provides the ability to quickly build, deploy, manage, and use connected, security-enhanced solutions with Web services. .NET connected solutions enable businesses to integrate their systems more rapidly and in a more agile manner and help them realize the promise of information anytime, anywhere, on any device.

.Net is basically developed to support language independent applications..Net programs are independent of Operating System and Hardware.Like Java has JVM, .Net also includes Virtual Machine known as C.L.R (Common Language Runtime).

#### Traditional way of executing programs:

The source code and pre compiled reference libraries are given to compiler and they are compiled and generating an exe file which is platform dependent.

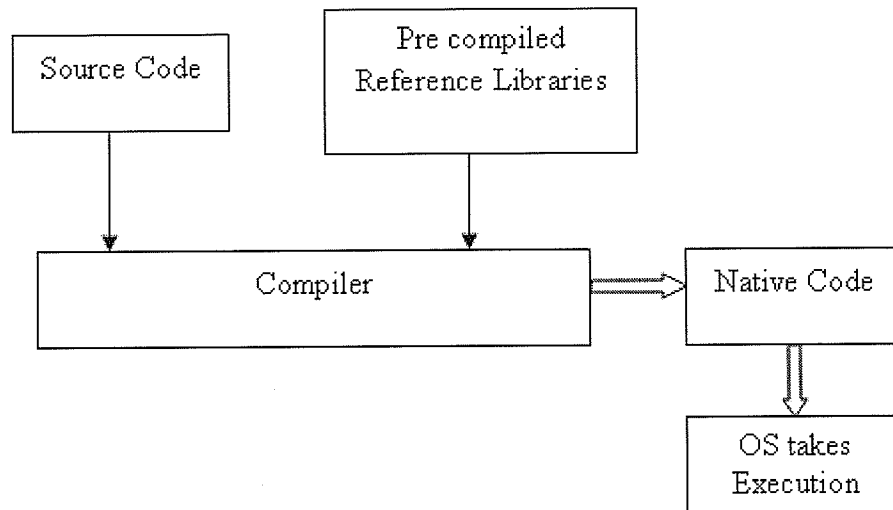


Figure 31. Traditional way of executing programs

.net way of executing programs

Source code and uncompiled reference libraries are given to the compiler and the file is generated after compiling is of the form M.S.I.L(MicroSoft Intermediate Language).

The CLR(Common Language Runtime) converts this code into executable at the runtime.

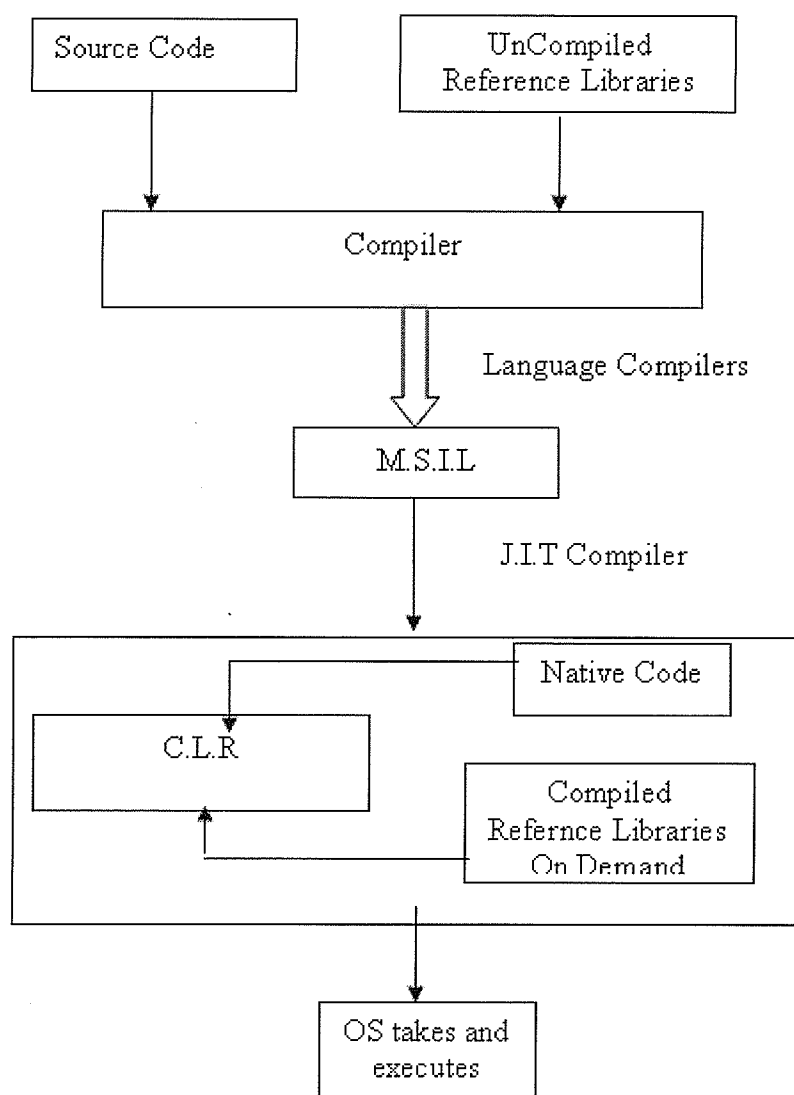


Figure 32. Dot Net way of executing programs

### **.NET Framework**

.Net Framework is an environment for building, deploying and running Web services and other applications.

.Net Framework components are:

- C.L.R

- M.S.I.L
- JITters
- Garbage Collector
- Base Class Libraries
- Manage Code VS Unmanaged Code
- Common Language Specification(CLS)
- Common Type System(CTS)

### **C.L.R (Common Language Runtime)**

It is a collection of resources which handles the execution of .NET programs as we have JVM to execute java programs.

### **M.S.I.L (Microsoft Intermediate Language)**

When we compile .Net compliant languages, the file which is generated is of the form M.S.I.L. This file is platform or CPU independent. While executing the MSIL code is converted into native code which is platform dependent or CPU dependent. While executing these programs CLR activates JITers(JIT compilers). One more file generated is called metadata which gives information about the program and reference libraries.

### **JITers(Just In Time Compilers)**

When interpreted language compiled code need to be executed, CLR invokes JIT compiler, which compile Intermediate Language Code to Native code for specific machine or operating system.

There are 2 types of JITers

- 1) Standard JIT
- 2) Econo JIT

#### **Standard JIT:**

Entire code assembly is taken and converted to native code with respect to operating system. The result is stored in cache. For further requests, response will be given from cache.

#### **Econo JIT:**

Requested contents are converted to native code on demand. Results are not stored in cache.

To execute .Net programs under UNIX platform we need MONO JIT compiler.

**Garbage Collector:**

Garbage collector deallocates memory of variables which are not in use. CLR also contains garbage collector which runs in lower priority thread. Garbage collector is called only when application memory is full.

**Base Class Libraries:**

.Net provides base class library for common and usual tasks. To use any class we need to add a reference.

Base class libraries:

System

System. data

System. drawing

System.xml

System.windows.forms

**Managed Code VS Unmanaged Code**

If the programs executed under the control of CLR they are said to be managed code.

Code that doesn't execute within the C.L.R. is called Unmanaged Code.

**CLS (Common Language Specification)**

Microsoft released a specification that each language need to qualify then considered as .Net Compliant Language.

If your code is in CLS boundary i.e., CLS compliant then it can be used by other .Net Languages.

**Common Type System:**

C.T.S defines the data types that intermediate language understands.

**Features of .Net:**

- Language Independence
- Platform Independence
- Hardware Independence
- ADO.net

.Net also allows users to connect to databases in 2 ways:

Connection oriented: Here, the connection is required in between application and database continuously.

Disconnected Model: Connection is required between application and database only when executing queries.

- Security

.Net provides security for windows applications as well as web applications.

Windows application: Code Access Security and Role Based Security

Web Application: Form Based Security, Windows Security and Password Authentication.

- Globalization and localization
- Language interoperability

## APPENDIX-2

### Microsoft Sql Server

**SQL Server** is a relational database management system produced by Microsoft. It supports a superset of Structured Query Language SQL, the most common database language. **SQL Server** is easy to manage and provides a separate OLAP engine. It is the ideal database for web applications written in Asp/Asp.Net.

#### Features of SQL Server 2000

##### 1) Internet Integration.

The SQL Server 2000 database engine includes integrated XML support. It also has the scalability, availability, and security features required to operate as the data storage component of the largest Web sites. SQL Server 2000 supports features such as English Query and the Microsoft Search Service to incorporate user-friendly queries and powerful search capabilities in Web applications.

##### 2) Scalability and Availability.

The same database engine can be used across platforms ranging from laptop to multiprocessor servers. SQL Server 2000 Enterprise Edition supports features such as indexed views, and large memory support that allow it to scale to the performance levels required by the largest Web sites.

##### 3) Enterprise-Level Database Features.

The SQL Server 2000 relational database engine supports the features required to support demanding data processing environments. The database engine protects data integrity while minimizing the overhead of managing thousands of users concurrently modifying the database. SQL Server 2000 distributed queries allow you to reference data from multiple sources as if it were a part of a SQL Server 2000 database, while at



the same time, the distributed transaction support protects the integrity of any updates of the distributed data. Replication allows you to maintain multiple copies of data, while ensuring that the separate copies remain synchronized. You can replicate a set of data to multiple, mobile, disconnected users, have them work autonomously, and then merge their modifications back to the publisher.

#### 4) Ease of installation, deployment, and use.

SQL Server 2000 includes a set of administrative and development tools that improve upon the process of installing, deploying, managing, and using SQL Server across several sites. .

### Database Architecture

Microsoft SQL Server 2000 data is stored in databases. The data in a database is organized into the logical components visible to users. A database is also physically implemented as two or more files on disk.

When using a database, we work primarily with the logical components such as tables, views, procedures, and users. The physical implementation of files is largely transparent. Typically, only the database administrator needs to work with the physical implementation.

Each instance of SQL Server has four system databases (master, model, tempdb, and msdb) and one or more user databases.

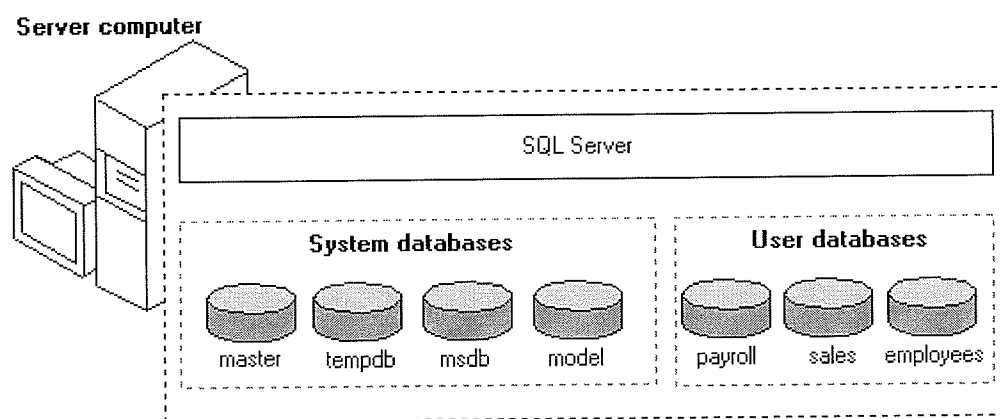


Figure 33. SQL Server

SQL Database Tables are the foundation of every RDBMS (Relational Database Management System). To retrieve data from tables sql commands are used.

**Several SQL commands:**SQL SELECT

SELECT SQL statement is used to retrieve data from a SQL database table.

SQL SELECT INTO

SQL SELECT INTO statement is used to copy data between database tables.

SQL DISTINCT

SQL DISTINCT clause together with the SQL SELECT keyword is used to return a dataset with unique entries for certain database table column.

SQL WHERE

The SQL WHERE command is used to specify selection criteria, thus restricting the result of a SQL query.

SQL LIKE

The SQL LIKE clause is used along with the SQL WHERE clause and specifies criteria based on a string pattern.

SQL INSERT INTO

SQL INSERT INTO clause is used to insert data into a SQL database table.

SQL UPDATE

SQL UPDATE statement is used to update data in a SQL database table.

SQL DELETE

SQL DELETE statement is used to delete data from a SQL database table.

SQL ORDER BY

SQL ORDER BY statement is used to sort the data retrieved in your SQL query.

SQL OR & AND

SQL OR & AND keywords together with the SQL WHERE clause is used to add several conditions to your SQL statement.

SQL IN

The SQL IN clause allows you to specify discrete values in your SQL WHERE search criteria.

### SQL BETWEEN

The SQL BETWEEN & AND keywords define a range of data between 2 values.

### SQL Aliases

SQL aliases can be used with database tables and/or with database table columns, depending on task you are performing.

### SQL COUNT

SQL COUNT aggregate function is used to count the number of rows in a database table.

### SQL MAX

SQL MAX aggregate function allows us to select the highest (maximum) value for a certain column.

### SQL MIN

SQL MIN aggregate function allows us to select the lowest (minimum) value for a certain column.

### SQL AVG

The SQL AVG aggregate function selects the average value for a certain table column.

### SQL SUM

SQL SUM aggregate function allows selecting the total for a numeric column.

## APPENDIX-3

### Screens

#### View Employee Details

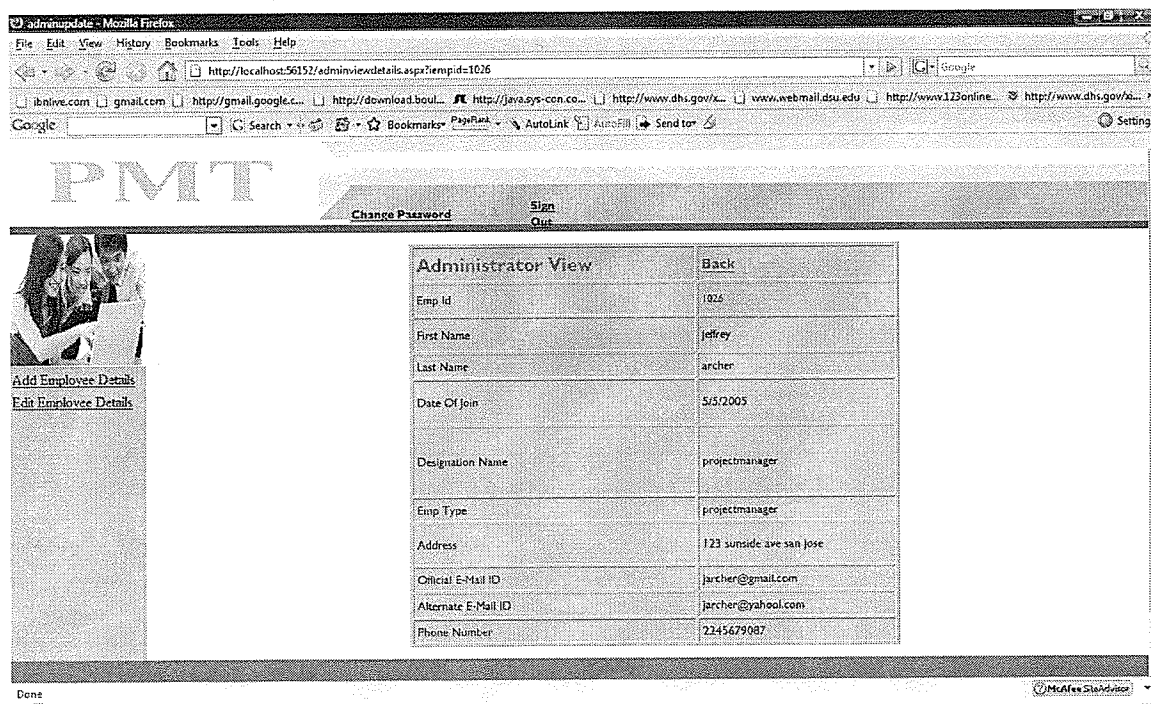


Figure 34. Employee view details

## Update Employee Details Form

adminupdate - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:50152/adminupdate.aspx?tempid=1026

ibnlive.com gmail.com http://gmail.google.c... http://download.boul... http://java.sys-ccn.co... http://www.dht.gov.k... www.webmail.das.edu http://www.123online... http://www.dht.gov.k...

Google Search Bookmarks Payfast Autolink Autofill Send to Settings

**PMT**

[Change Password](#) [Sign Out](#)

[Add Employee Details](#)  
[Edit Employee Details](#)

Updation Form		Back
First Name	jeffrey	
Last Name	larcher	
Date Of Join	5/5/2005	
Designation Name	<div>projectmanager</div> <div>Delete</div> <div>Administrator</div> <div>projectmanager</div> <div>technical lead</div> <div>Add</div>	
Emp. Type	<div>projectmanager</div> <div>administrator</div> <div>Add</div>	
Address	123 sunside ave san jose	
Official E-Mail ID	larcher@gmail.com	

Done

McAfee SiteAdvisor

Figure 35. Update employee details form

## Editing Project Details Form

adminupdate - Mozilla Firefox

File Edit View History Bookmarks Tools Help


http://localhost:56152/viewupdatedelprojects.aspx

itnive.com gmail.com http://gmail.google.c... http://download.boul... http://java.sun.co... http://www.dhs.gov/k... www.webmail.dsu.edu http://www.123online... http://www.dhs.gov/x...

Google Search Bookmarks PageRank AutoLink AutoFill Send for Settings

# PMT

Change Password Sign Out



- Add Projects
- Edit Projects
- Add Modules
- Edit Modules
- Add Resources
- Add Tasks
- Edit Tasks
- My TimeSheet
- Employee Reports
- Project Reports
- Reports by tasks

Sno	Project Name	Start Date	Due Date	Type	Status	Assigned To	Estimated Hours	Cost			Delete
1	edwd	4/2/2007 12:00:00 AM	4/17/2008 12:00:00 AM	Billable	created	karteesk boyenapalli	345	567	More Info	update	Delete

Done

MyAtee Standalone

Figure 36. Editing project details form

## Project Manager: Updating Project Details

**PMT**

Change Password Sign Out

**UPDATE PROJECT** Back

Project Name	edwd
Start Date	4/2/2007
End Date	4/17/2008
Project Type	Billable
Assigned To	jeffrey archer
Estimated Hours	245
Status	created
Comments	billable project
Client Name	dtdd
Client Address	123 555 street
Client Phone Number	45454545
Client E-Mail ID	ree@yahoo.com

Done McAfee Standalone

**Navigation Links:**

- Add Projects
- Edit Projects
- Add Modules
- Edit Modules
- Add Resources
- Add Tasks
- Edit Tasks
- My TimeSheet
- Employee Reports
- Project Reports
- Reports by tasks

Figure 37. Project Manager Update Project Details form

## Project Manager: Deleting Project

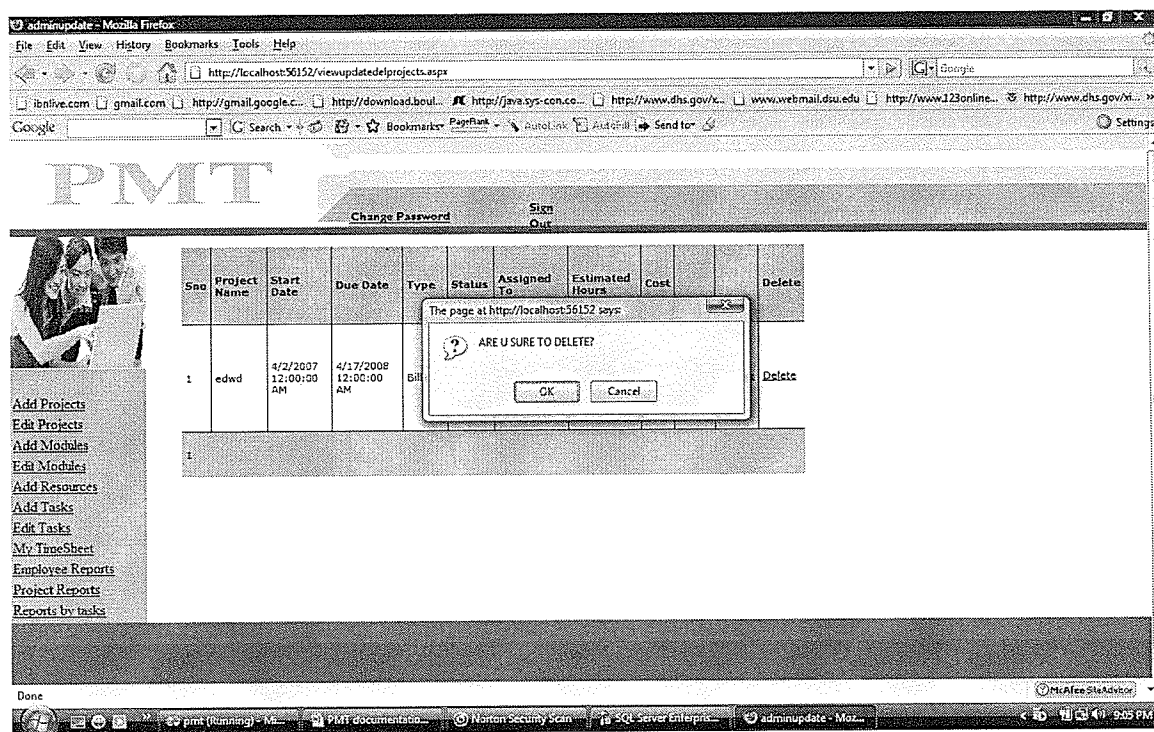


Figure 38. Project manager deleting project



## Checking Available Resources

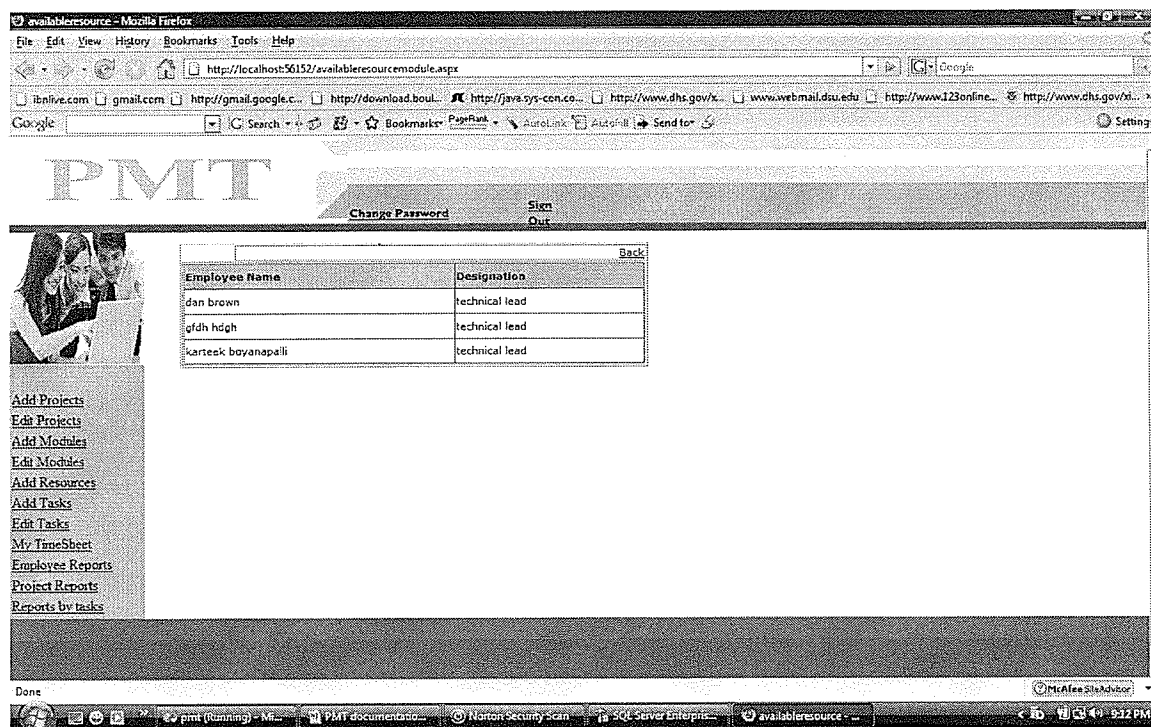


Figure 39. Check available resources

## Project Manager Editing Modules Form

adminupdate - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:56152/viewupdateinmodules.aspx

Google

itnive.com gmail.com http://gmail.google.c... http://download.boul... http://java.sys-con.co... http://www.dhs.gov/x... www.webmail.dsu.edu http://www.123online... http://www.dhs.gov/x...

Google Search Search Bookmarks PageRank AutoLink AutoFill Send to Settings

# PMT

Change Password Sign Out

Add Projects  
Edit Projects  
Add Modules  
Edit Modules  
Add Resources  
Add Tasks  
Edit Tasks  
My TimeSheet  
Employee Reports  
Project Reports  
Reports by tasks

S No	Project name	module name	view	Update	Delete
1	pmt	gather requirements	view	Update	Delete
2	pmt	design database	view	Update	Delete
3	pmt	test	view	Update	Delete
4	pmt	test	view	Update	Delete
5	ERM	admin module	view	Update	Delete

Done

pmt (running) - ME... PMT documentation... Norton Security Scan SQL Server Enterprise... adminupdate - Moz... 9:33 PM

Figure 40. Project Manager Editing Modules form

## Project Manager Viewing Modules Form

View Module	Back
Project Name	pnc
Module Name	gather requirements
Assigned To	jellrey archer
Start Date	12/1/2006
End Date	12/10/2007
Estimated Hours	64
Status	created

Figure 41. Project Manager Viewing Modules form

## Project Manager Updating Modules Form

The screenshot shows a web browser window with the title 'updatemodule - Mozilla Firefox'. The address bar displays 'http://localhost:56152/updatemodule.aspx?imid=5'. The page features a navigation sidebar on the left with links: 'Add Projects', 'Edit Projects', 'Add Modules', 'Edit Modules', 'Add Resources', 'Add Tasks', 'Edit Tasks', 'My TimeSheet', 'Employee Reports', 'Project Reports', and 'Reports by tasks'. The main content area is titled 'Update Module' and includes a 'Back' link. The form fields are as follows:

Update Module		Back
Project	pmt	
Module	gather requirements	
Status	created	
Assigned To	jffrey archer	
Start Date	12/1/2006	
End Date	12/10/2007	
Estimated Hours	64	
Update		

The browser's status bar at the bottom shows 'Done' and the system clock indicates 9:17 PM.

Figure 42. Project Manager Updating Modules form

## Project Manager Adding Resources Form

The screenshot shows a web browser window titled "adminupdate - Mozilla Firefox" with the address bar displaying "http://localhost:50152/resources.aspx". The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The address bar also shows a search bar with "Google" and a list of bookmarks including "ibnlive.com", "gmail.com", "http://gmail.google...", "http://download.boul...", "http://java.sys-con.co...", "http://www.dhs.gov/x...", "www.webmail.dsu.edu", "http://www.123online...", and "http://www.dhs.gov/x...". The browser's status bar at the bottom shows "Done" and a taskbar with icons for "pmt (Running) - M...", "PMT documentation...", "Norton security scan", "SQL Server Enterprise...", "adminupdate - Moz...", and "McAfee SiteAdvisor".

The main content area of the browser displays the "PMT" logo and a navigation menu on the left with links: "Add Projects", "Edit Projects", "Add Modules", "Edit Modules", "Add Resources", "Add Tasks", "Edit Tasks", "My TimeSheet", "Employee Reports", "Project Reports", and "Reports by tasks". The "Add Resources" link is highlighted.

The "RESOURCE ALLOCATION" form is displayed in the center. It contains the following fields:

- Select Project:** A dropdown menu with "pmt" selected.
- Select TeamLeader:** A dropdown menu with "dan brown" selected.
- Select TeamMember:** A list box with the following members: "samantha brown (technical member)", "dan brown (technical lead)", "john grisham (technical member)", "ted turner (technical member)", and "don leman (technical member)".
- Add:** A button to submit the form.

Figure 43. Project Manager Adding Resources form

## Project Manager Editing Tasks Form

**PMT**

Change Password Sign Out

SNO	Project	Module	Task Name	Assigned To	Start Date	End Date	Estimated Hours	Hours Worked	Status	Update	Delete
1	CRM	customer module	create login details form	jeffrey archer	3/12/2007 12:00:00 AM	3/12/2007 12:00:00 AM	8	0	finished	<a href="#">Update</a>	<a href="#">Delete</a>
2	pmt	gather requirements	design usecases	samantha brown	3/12/2007 12:00:00 AM	3/12/2007 12:00:00 AM	8	8	created	<a href="#">Update</a>	<a href="#">Delete</a>
3	CRM	debug admin module	debug registration form	samantha brown	3/12/2007 12:00:00 AM	3/12/2007 12:00:00 AM	8	32	finished	<a href="#">Update</a>	<a href="#">Delete</a>
4	pmt	test	test registration form	samantha brown	3/12/2007 12:00:00 AM	3/12/2007 12:00:00 AM	8	0	created	<a href="#">Update</a>	<a href="#">Delete</a>
5	pmt	gather requirements	design class diagram	jeffrey archer	4/12/2007 12:00:00 AM	5/12/2007 12:00:00 AM	16	8	created	<a href="#">Update</a>	<a href="#">Delete</a>

1 2 3

Done

McAfee SiteAdvisor

print (Running) - M... PMT documentation... Norton Security Scan... SQL Server Enterprise... adminupdate - Moz... 9:19 PM

Figure 44. Project Manager Editing Tasks form

### Project Manager Updating Task Form:

The screenshot shows a web browser window titled "updatetasks - Mozilla Firefox". The address bar displays "http://localhost:56152/updatetasks.aspx?taskId=1". The browser's toolbar includes buttons for File, Edit, View, History, Bookmarks, Tools, and Help. Below the toolbar, there are several bookmarks and a search bar. The main content area features a large "PMT" logo on the left, a navigation menu with links like "Add Projects", "Edit Projects", "Add Modules", "Edit Modules", "Add Resources", "Add Tasks", "Edit Tasks", "My TimeSheet", "Employee Reports", "Project Reports", and "Reports by tasks". To the right of the navigation menu is a form titled "Update Task". The form has a "Back" button at the top right. The form fields are as follows:

Update Task	
Project Name	CRM
Module Name	customer module
Task Name	create login details form
Assigned To	samantha brown (team member)
Status	created
Start Date	3/12/2007
End Date	3/12/2007
Estimated Hours	0
<input type="button" value="Update"/>	

At the bottom of the browser window, the taskbar shows several open applications: "print (Running) - M...", "PMT documentation...", "Norton Security Scan", "SQL Server Enterprise...", and "updatetasks - Mozilla...". The system clock in the bottom right corner shows "9:20 PM".

Figure 45. Project Manager Updating Tasks form



## Viewing Task Details From Project Reports

repotask - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:56152/repotask.aspx

Google

ibnlive.com gmail.com http://gmail.google.c... http://download.boul... http://java.sys-con.co... http://www.dhs.gov/... www.webmail.dsu.edu http://www.123online... http://www.dhs.gov/...

Google Search Bookmarks PageRank AutoLink AutoFill Send to Settings

**PMT**

Change Password Sign Out

Project: All Employee: All Status: All Apply Filter

SNo	Taskname	projectname	Assignedto	Assignedby	StartDate	EndDate	Status
1	create login details form	CRM	jeffrey archer	jeffrey archer	03/12/2007	03/12/2007	finished
2	design usecases	WDT	samantha brown	jeffrey archer	03/12/2007	03/12/2007	created
3	debug registration form	CRM	samantha brown	jeffrey archer	03/12/2007	03/12/2007	finished
4	test registration form	pmt	samantha brown	jeffrey archer	03/12/2007	03/12/2007	created
5	design class diagram	pmt	jeffrey archer	jeffrey archer	04/12/2007	05/12/2007	created

1 2 3 4

Done

pmt (running) - M... PMT documentatio... Norton Security Scan SQL Server Enterpris... repotask - Mozill...

McAfee Standby

9:26 PM

Figure 46. Viewing task details form project reports



## Form To Send E-Mails

The screenshot shows a web browser window titled 'adminupdate - Mozilla Firefox'. The address bar displays 'http://localhost:50152/emailnotification.aspx?val=email:jarcher@yahoo.com'. The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The toolbar contains navigation buttons, a search bar with 'Google' text, and buttons for Bookmarks, Print, AutoLink, and Send to. The main content area features the 'PMT' logo at the top left, followed by 'Change Password' and 'Sign Out' links. Below the logo is a vertical menu with links: Add Projects, Edit Projects, Add Modules, Edit Modules, Add Resources, Add Tasks, Edit Tasks, My TimeSheet, Employee Reports, Project Reports, and Reports by tasks. The central part of the page is an email form with a 'To' field containing 'jarcher@yahoo.com', an empty 'Subject' field, and a large empty text area for the message body. A 'Send' button is located at the bottom of the form. The status bar at the bottom shows 'Done' and a taskbar with icons for PMT (Running), PMT document, Norton Security Scan, SQL Server Enterprise, and adminupdate - Moz.

adminupdate - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:50152/emailnotification.aspx?val=email:jarcher@yahoo.com

Google

libalive.com gmail.com http://gmail.google.c... http://download.boul... http://java.sys-cen.c... http://www.dhs.gov/... www.webmail.dsu.edu http://www.123online... http://www.dhs.gov/d...

Google Search Bookmarks Print AutoLink AutoFill Send to Settings

PMT

Change Password Sign Out

To: jarcher@yahoo.com

Subject:

Send

Add Projects  
Edit Projects  
Add Modules  
Edit Modules  
Add Resources  
Add Tasks  
Edit Tasks  
My TimeSheet  
Employee Reports  
Project Reports  
Reports by tasks

Done

pmt (Running) - M... PMT document... Norton Security Scan SQL Server Enterprise adminupdate - Moz

9:36 PM

Figure 47. Send Emails form

### Team member checking His Assigned Tasks

The screenshot shows a web browser window with the following elements:

- Browser:** Mozilla Firefox, address bar shows `http://localhost:56152/myassignedtask.aspx`.
- Header:** Large 'PMT' logo, with 'Change Password' and 'Sign Out' links.
- Sidebar:** Contains a photo of two people and links for 'My Assigned Tasks' and 'My TimeSheet'.
- Table:** A table with 8 columns: SNo, Project Name, Module Name, Task Name, Start Date, End Date, Estimated Hours, and a 'Start' button.

SNo	Project Name	Module Name	Task Name	Start Date	End Date	Estimated Hours	
1	pmt	uml diagrams	requirements	01/01/00	01/01/00	70	<input type="button" value="Start"/>
2	pmt	test	module testing	01/01/00	01/01/00	60	<input type="button" value="Start"/>
3	CRM	debug admin module	design	01/01/00	01/01/00	45	<input type="button" value="Start"/>

The task list is numbered 1, 2, 3 in the left margin of the table.

Figure 48. Team Member checking his assigned tasks